FINDING OF NO SIGNIFICANT IMPACT

CONSTRUCTION AND OPERATION OF AN AUTOMATIC CAR WASH AND DRIVE-THRU COFFEE KIOSK AT KIRTLAND AIR FORCE BASE ALBUQUERQUE, NEW MEXICO

The Army & Air Force Exchange Service (AAFES) prepared the attached Environmental Assessment (EA) to assess the potential environmental consequences of Proposed Actions at Kirtland Air Force Base (AFB). The actions proposed consist of the construction and operation of an Automatic Car Wash and a Drive-Thru Coffee Kiosk.

DESCRIPTION OF THE PROPOSED ACTIONS AND ALTERNATIVES

Proposed Actions

The AAFES proposes to construct two separate facilities; an Automatic Car Wash and a Drive-Thru Coffee Kiosk, at Kirtland AFB in Albuquerque, New Mexico. The new Automatic Car Wash would be located at the existing Shoppette located at the corner of Gibson Blvd. and Second St. The car wash would be a 1,610 square foot building located directly east of the Shoppette and multi-product dispenser gas pumps. The Automatic Car Wash would provide additional services not currently on Kirtland AFB. Construction of the car wash would occur between fiscal years (FY) 2004 and FY 2005.

The new Drive-Thru Coffee Kiosk would be located in the parking lot of the Mini Mall (Bldg. 20224) directly west of First St., south of F Ave. and north of G Ave. The proposed facility would be approximately 188 square feet. The Drive-Thru Coffee Kiosk would provide a service not currently provided on Kirtland AFB. Construction of the Coffee Kiosk would take place between FY 2004 and FY 2005.

Alternative 1

Under this alternative, the Automatic Car Wash would be located east of the Car Care Center and north of the gas pumps at the Shoppette. The Shoppette and Car Care Center share the same building, entrances and exits.

No-Action Alternative

Under this alternative, the AAFES would not construct the Automatic Car Wash or Drive-Thru Coffee Kiosk. As a result, these additional services would not be located on Kirtland AFB.

SUMMARY OF ANTICIPATED ENVIRONMENTAL EFFECTS

Proposed Actions

Implementation of the Proposed Actions would result in minor short-term negative impacts to air quality, noise, and transportation and utilities from construction activities. Minor beneficial impacts are expected to occur to local socioeconomics. No impacts are anticipated to occur to current health and safety, land use and visual resources, geological resources, water resources, biological resources, cultural resources or hazardous material or waste management from implementation of the Proposed Actions.

Human Health and Safety. Implementation of the Proposed Actions would not change the current health and safety environment at Kirtland AFB.

The proposed facilities do not encroach upon explosive safety zones or runway protection zones, so these areas would not be affected by nor would they affect the Proposed Actions.

There would be no disproportionate increase in environmental health and safety risks to children from the Proposed Actions. Children would not be present in the construction area and would not be at risk once the facilities were completed. Therefore, possible disproportionate negative impacts to children identified in Executive Order (EO) 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, would not occur.

Air Quality. Implementation of the Proposed Actions would result in relatively short-term negative impacts to air quality from construction activities. Construction activities that would use large vehicles and construction equipment producing carbon monoxide, an emission that is monitored in the Albuquerque air basin, would not result in violations of the de minimis levels set for the area. Where applicable, particulate impacts from soil disturbance would be minimized by using best management practices to reduce erosion by wind and construction traffic. Long-term impacts to air quality associated with the Proposed Actions would not occur since there would not be a significant increase in vehicular traffic.

Noise. Implementation of the Proposed Actions could result in short-term, minor impacts to noise from construction activities. However, those activities would be minor when compared to the noise generated on base by commercial and military aircraft overflight. No long-term impacts to noise would occur from the operation of the AAFES Automatic Car Wash or Drive-Thru Coffee Kiosk.

Land Use and Visual Resources. Land use under the Proposed Actions would remain compatible with existing land uses. Visual resources would not be affected since the new facilities would be consistent with other structures and visual resources in the area.

Transportation and Utilities. The Proposed Actions would have a temporary short-term impact on transportation and circulation as a result of increased traffic from construction vehicles and heavy equipment. Operation of the AAFES Automatic Car Wash would not result in an increase in traffic because people already access the area for the current services offered at the existing site. There would be a minor increase in traffic near the Drive-Thru Coffee Kiosk while people stop to get coffee on their way to work. However, no significant traffic impacts are expected.

There would be no significant impact on current utilities from the Proposed Actions because current utilities are adequate in the area and the Proposed Actions would not significantly increase demand on the utilities.

Geological Resources. Implementation of the Proposed Actions would not have a negative impact to soils from construction activities. Soils in the area are suitable for

building. The Drive-Thru Coffee Kiosk, would be installed on existing pavement and therefore, would not have an impact on soils.

Water Resources. No significant impacts to water resources would occur from implementation of the Proposed Actions. Water quality would not be affected as construction activities would be shallow and not approach the groundwater table. Furthermore, any hazardous materials generated at the proposed facilities would be disposed of properly and not allowed to come in contact with any water resource. As the Proposed Actions are not located near a floodplain, this resource would not be impacted. Water consumption would increase slightly because of the use of water for the Automatic Car Wash and the Drive-Thru Coffee Kiosk. The increase would not result in a significant impact on water resources.

Biological Resources. Implementation of the Proposed Actions would not result in any impacts to sensitive species, vegetation, wildlife, or listed species because the actions are occurring in areas that have a low incidence of wildlife and sensitive biological resources.

Cultural Resources. No significant cultural resources, historic or prehistoric are known to exist within the proposed project boundaries. The developed area of the base has been subjected to repeated modifications. As a result, no impacts are anticipated to occur to known cultural resources from implementation of the Proposed Actions.

Socioeconomics. Socioeconomic impacts from implementation of the Proposed Actions would be beneficial, but minor. Purchase of construction materials and salaries paid to construction workers would constitute a minor, temporary, beneficial impact on the local economy. Contracts for construction equipment would also have a temporary, beneficial impact. Customers in need of a car wash or coffee may choose the proposed on-base facilities rather than existing off-base locations. Therefore, minor negative economic impacts may occur at off-base car washes and coffee facilities. Although the Albuquerque area has relatively high percentages of minority and low-income populations, these communities would not be disproportionately affected. Therefore, any possible impacts to populations identified in EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, would be negligible.

Hazardous Materials and Waste Management. Construction of the Automatic Car Wash and Drive-Thru Coffee Kiosk would result in a short-term increase in the generation of nonhazardous and hazardous waste. Nonhazardous construction wastes (e.g., concrete and lumber) would be disposed of at the Kirtland AFB landfill, which has adequate capacity to accommodate construction-related waste. Additional nonhazardous waste (e.g., plastics and paper) generated by increased worker activity under the proposed projects would be collected in on-site dumpsters and transported to the City of Albuquerque's Cerro Colorado Landfill. Recyclable wastes would be separated for pickup in accordance with the Kirtland AFB Qualified Recycling Program. With the exception of fuel, oils, and lubricants used by construction equipment, no additional hazardous wastes would be generated by construction of the new facilities.

Operation of the Automatic Car Wash would generate minor amounts of hazardous materials in the sludge from the oil/water separator. The oil/water separator would be cleaned regularly and the sludge would be disposed of in accordance with all applicable federal, state, and local regulations, and follow the guidelines set forth in the Kirtland AFB Hazardous Waste Management Plan.

Alternative 1

Under this alternative the Automatic Car Wash would be constructed east of the Car Care Center and north of the multi-product dispensers. Impacts to resources resulting from selection of this alternative would be the same as those stated for the Proposed Actions.

No-Action Alternative

Under this alternative, the AAFES would not construct the Automatic Car Wash or Drive-Thru Coffee Kiosk. No change to current conditions of human health and safety, air quality, noise, land use and visual resources, transportation and utilities, geological resources, water resources, biological resources, cultural resources, socioeconomics or hazardous materials and waste management would occur from the No-Action Alternative.

CONCLUSION

After careful review of the EA of these Proposed Actions, I have concluded that the Proposed Actions would not have a significant impact on the quality of the natural or human environment. Therefore, issuance of a Finding of No Significant Impact is warranted, and an Environmental Impact Statement is not required. This analysis fulfills the requirements of the National Environmental Policy Act and the implementing regulations promulgated by the Council on Environmental Quality.

Accepted By:

_____	_____
DARRIN ROGERS	CYNTHIA L. GOOCH, GS-12
Army & Air Force Exchange Service	Environmental Planning

Approved By:

_____

HENRY L. ANDREWS, JR.
Colonel, USAF
Commander, USAF

Preliminary Final Environmental Assessment

Construction and Operation of an Automatic Car Wash and Drive-Thru Coffee Kiosk

Prepared for:

Army & Air Force Exchange Service
Dallas, Texas
and
377th Air Base Wing, Air Force Materiel Command
Kirtland Air Force Base, New Mexico

Purchase Order Number 06-3622-4861

March 2005

COVER SHEET
PRELIMINARY FINAL ENVIRONMENTAL ASSESSMENT
KIRTLAND AIR FORCE BASE, NEW MEXICO

Agency: Army & Air Force Exchange Service (AAFES)

Contact for further information: Inquiries on this document should be directed to Darrin Rogers, AAFES Project Manager, 3911 South Walton Walker Blvd., Dallas, Texas 75236, (214) 312-3859 or Greg Smith, AAFES RE-E, 3911 South Walton Walker Blvd., Dallas, Texas 75236, (214) 312-2109, or e-mail to rogersd@aafes.com or smithgregory@aafes.com.

Proposed Actions: The AAFES proposes to construct and operate an Automatic Car Wash at the existing Shoppette located at the corner of Gibson Blvd. and Second St., and a Drive-Thru Coffee Kiosk located off First St. between F and G Ave.

Designation: Preliminary Final Environmental Assessment.

Abstract: In addition to the Proposed Actions and the No-Action Alternative, one alternative location was considered for the Automatic Car Wash. This alternative would be to locate the Automatic Car Wash east of the Car Care Center and north of the gas pumps (multi-product dispensers) and Shoppette. The Drive-Thru Coffee Kiosk would remain in the same location as for the Proposed Actions.

EXECUTIVE SUMMARY

The Army & Air Force Exchange Service (AAFES) proposes to construct and operate an Automatic Car Wash at the AAFES Shoppette located at Gibson Blvd. and Second St., and a Drive-Thru Coffee Kiosk off First St. between F and G Ave. at Kirtland Air Force Base, New Mexico

In addition to the Proposed Actions and the No-Action Alternative, there was one alternative location considered for the Automatic Car Wash, east of the Car Care Center and north of the gas pumps.

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PRELIMINARY FINAL ENVIRONMENTAL ASSESSMENT CONSTRUCTION AND OPERATION OF AN AUTOMATIC CAR WASH AND DRIVE-THRU COFFEE KIOSK AT KIRTLAND AIR FORCE BASE ALBUQUERQUE, NEW MEXICO

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ACRONYMS AND ABBREVIATIONS

AAFES	Army & Air Force Exchange Service
ABW	Air Base Wing
ADT	Average Daily Traffic
AEHD	Albuquerque Environmental Health Department
AFB	Air Force Base
AQCR	Air Quality Control Region
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CWA	Clean Water Act
dB	Decibels
dBA	A-weighted decibel scale
DoD	Department of Defense
EA	Environmental Assessment
EIR	Economic Impact Region
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FY	Fiscal Year
LOS	Level of Service
mgl	milligrams per liter
mph	miles-per-hour
MSA	Metropolitan Statistical Area
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMAC	New Mexico Administrative Code
NMDG&F	New Mexico Department of Game and Fish
NMEMNRD	New Mexico Energy, Minerals, and Natural Resources Department
NO_2	Nitrogen Dioxide
NPDES	National Pollutant Discharge Elimination System
O_3	ozone
PNM	Public Service Company of New Mexico
ROI	Region of Influence
RPZ	Runway Protection Zone
SIP	State Implementation Plan
USACE	US Army Corps of Engineers
USAF	US Air Force
USFWS	US Fish and Wildlife Service
V/C	Volume-to-Capacity

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CHAPTER 1
PURPOSE AND NEED FOR ACTIONS

1.1 INTRODUCTION

The National Environmental Policy Act (NEPA) requires federal agencies to consider the potential environmental consequences of proposed actions in their decision-making process. The intent of NEPA is to protect, restore, or enhance the environment through well-informed federal decisions. The Council on Environmental Quality (CEQ) was established under NEPA to implement and oversee federal policy in this process. In 1979, the CEQ issued the Regulations for Implementing the Procedural Provisions of NEPA 40 Code of Federal Regulations [CFR] Sections 1500-1508. The CEQ regulations encourage federal agencies to develop and implement procedures that address the NEPA process in order to avoid or minimize adverse effects on the environment.

32 CFR 989 establishes the Environmental Impact Analysis Process and the specific procedural requirements for the implementation of NEPA on US Air Force projects. Executive Order (EO) 11514, *Protection and Enhancement of Environmental Quality*, as amended by EO 11991, *Relating to Protection and Enhancement of Environmental Quality*, set policy for directing the federal government in providing leadership in protecting and enhancing the quality of the nation's environment.

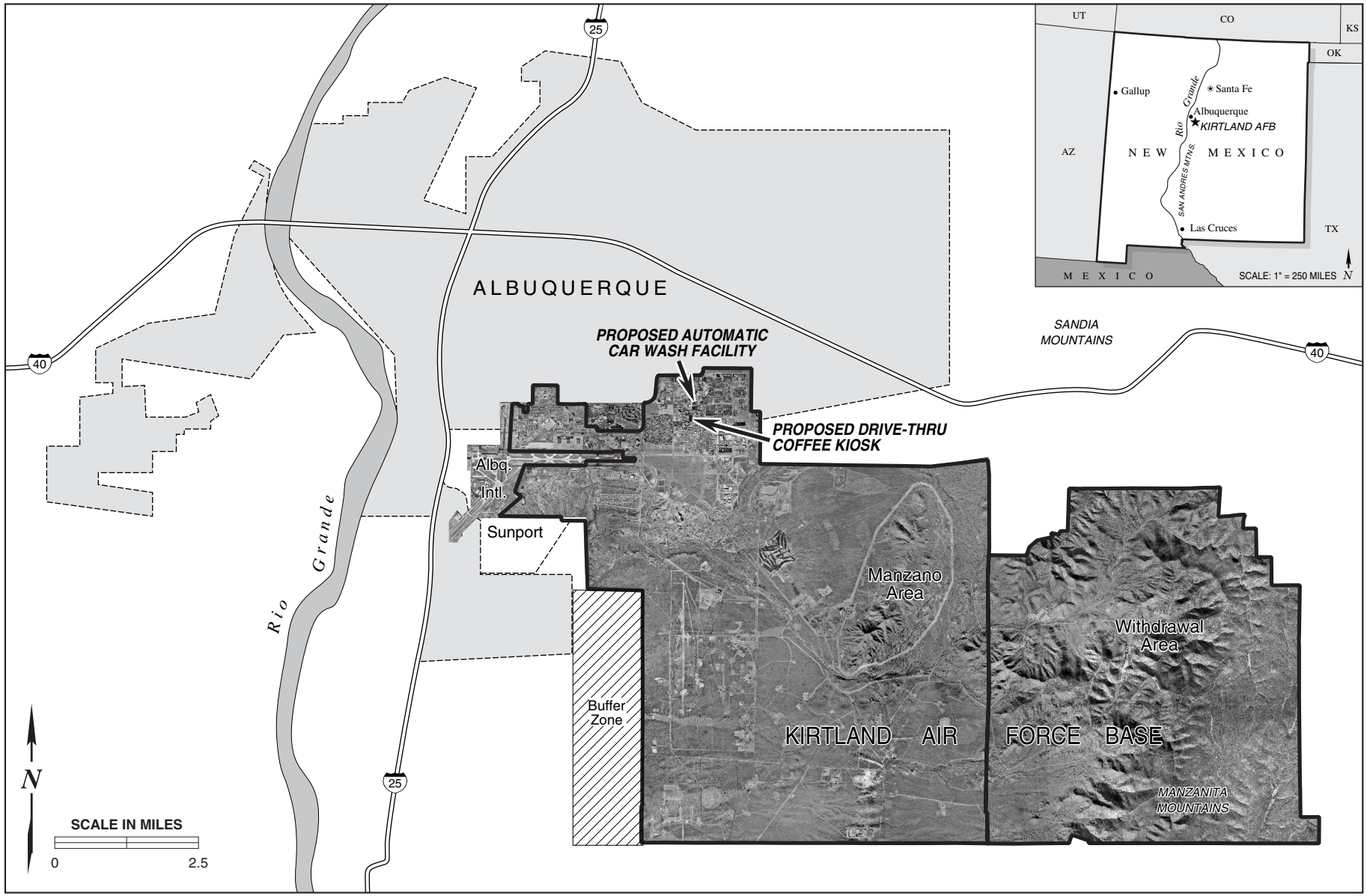
This Environmental Assessment analyzes Proposed Actions by the Army & Air Force Exchange Service (AAFES) including:

- Construction and operation of an Automatic Car Wash at an existing Shoppette on Kirtland Air Force Base (AFB).
- Installation and operation of a Drive-Thru Coffee Kiosk in the parking lot east of the Mini Mall (Bldg. 20224) on Kirtland AFB.

1.2 LOCATION OF PROPOSED ACTIONS

Kirtland AFB occupies 52,678 acres (62 square miles) in Bernalillo County, just southeast of Albuquerque, New Mexico (Figure 1-1). Land use around the installation consists of predominantly urban (established and developing land) land to the north, northwest and west of the base. South and southeast of the installation, the Isleta Pueblo lands are generally open space and forest or vacant land. North and northeast of the installation is Cibola National Forest land. The Proposed Actions would be located in the developed northwest corner of the base.

Kirtland AFB is now operated by the 377th Air Base Wing (377 ABW) of Air Force Materiel Command. The 377 ABW's prime mission, as the host unit at Kirtland AFB, is munitions storage, readiness, and base operating support for approximately 76 federal government and 384 private sector tenants and associate units (Kirtland AFB 2004).



1-2

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EA

Kirtland Air Force Base Location

FIGURE

1-1

The AAFES operates several facilities on Kirtland AFB and is the proponent of the actions assessed in this document. The mission of the AAFES is to "provide merchandise and services of necessity and convenience to authorized customers at uniformly low prices; and generate reasonable earnings to supplement appropriated funds for the support of Army and Air Force Morale, Welfare and Recreation programs" (AAFES 2004).

1.3 PURPOSE AND NEED FOR ACTIONS

The purpose of the Proposed Actions is to provide additional services to military personnel and dependents of Kirtland AFB. AAFES has identified a need for improved commissary and exchange services at the installation. Among the identified needs are the following:

- An automatic car wash is unavailable at or near the existing Shoppette where there is high traffic and customer volume. There are no other automatic car wash facilities on the installation.
- There are currently no coffee kiosks located on the installation.

1.4 DECISION TO BE MADE AND DECISION-MAKER

AAFES will make the decision whether to construct the Automatic Car Wash and Drive-Thru Coffee Kiosk at the proposed locations. The installation commander will make a decision on whether an Environmental Impact Statement is warranted or make a determination of a Finding of No Significant Impact.

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CHAPTER 2
DESCRIPTION OF PROPOSED ACTIONS AND ALTERNATIVES

2.1 INTRODUCTION

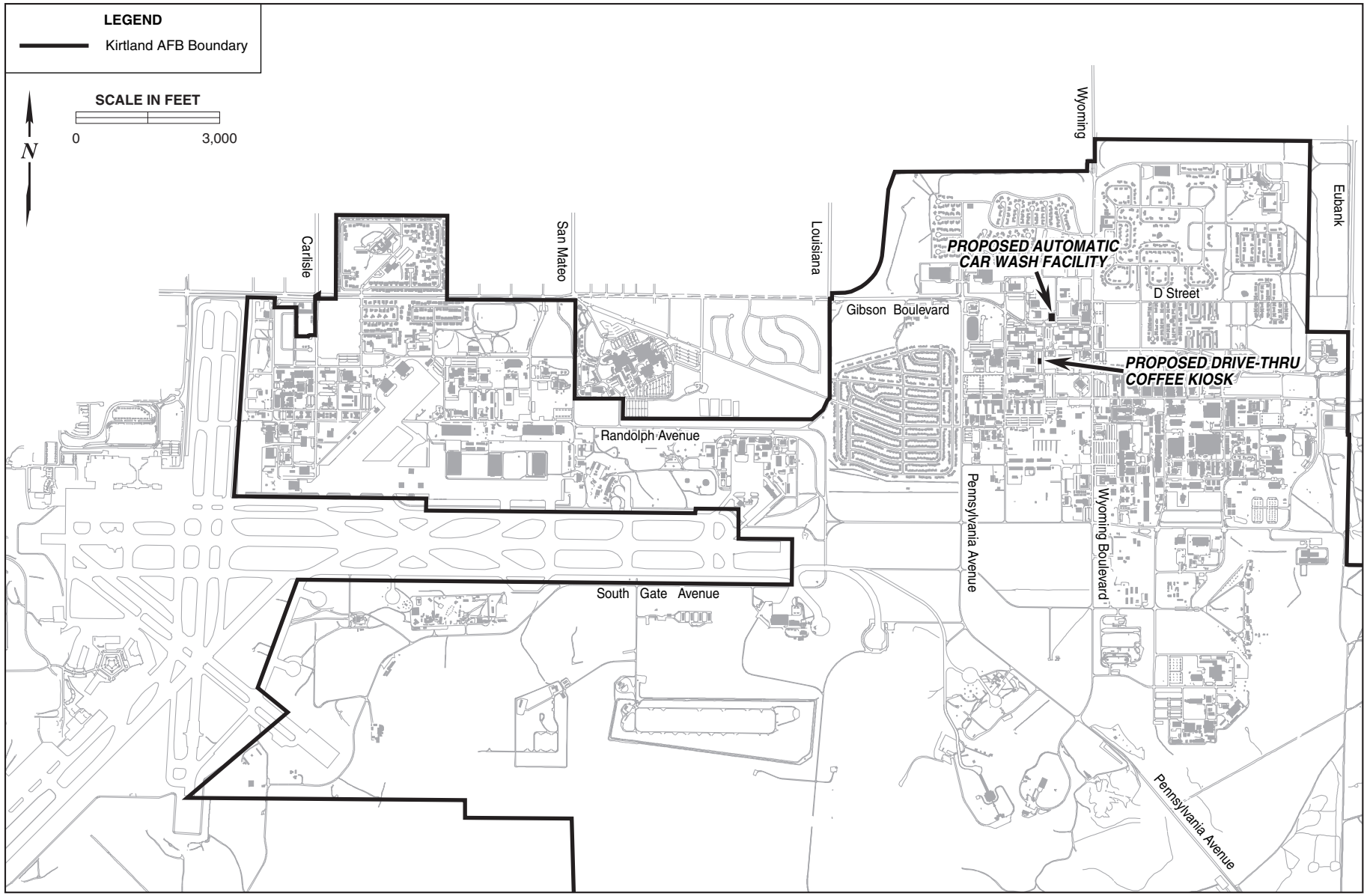
The Army & Air Force Exchange Service (AAFES) proposes to construct two separate facilities; an In-Bay Automatic Car Wash and a Drive-Thru Coffee Kiosk, at Kirtland Air Force Base (AFB) in Albuquerque, New Mexico (Figure 2-1). The following section describes the Proposed Actions and Alternatives to these actions.

2.2 HISTORY OF THE FORMULATION OF ALTERNATIVES

The Council on Environmental Quality (CEQ) guidelines implementing National Environmental Policy Act (NEPA), and 32 Code of Federal Regulations (CFR) 989, which implements the US Air Force (USAF) NEPA process, require the consideration of reasonable alternatives to a proposed action. Only those alternatives that are determined to be reasonable relative to their ability to fulfill the need for the action warrant a detailed environmental analysis. The identification of such alternatives involves defining a set of criteria based on the need for the action that an alternative must meet. Once defined, these criteria must be applied consistently to each of the candidate alternatives. For the Proposed Actions, alternatives were required to address the need to provide automatic car wash and drive-thru coffee services to Kirtland AFB personnel.

The following general criteria were used to identify reasonable alternatives. These criteria were developed based on the purpose and need and other land use and environmental factors pertinent to screening potential alternatives.

- Convenience to AAFES customers;
- High visibility to potential customers;
- Safe vehicular access and minimal impacts on existing traffic flow in the area;
- Compatibility with land-use designations and the surrounding visual character;
- Adequate space to accommodate the intended uses;
- Accessibility from one or more public roads;
- Compatibility with current and future planned projects; and
- Minimal adverse impacts to natural resources.



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Location of Proposed Army & Air Force Exchange Service Car Wash and Coffee Kiosk
Kirtland Air Force Base

FIGURE

2-1

2.3 DESCRIPTION OF THE PROPOSED ACTION

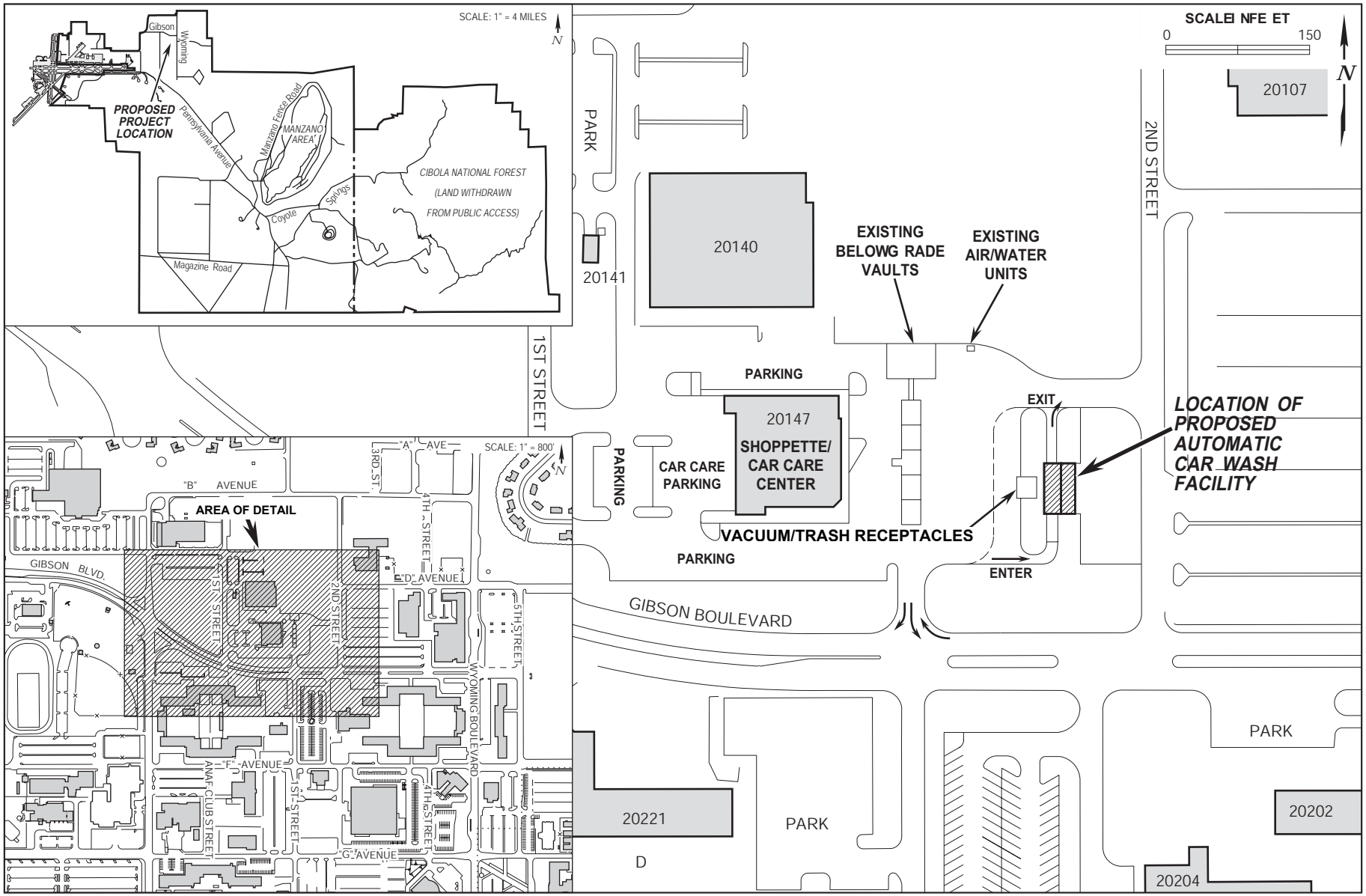
Construction and Operation of the Automatic Car Wash and Drive-Thru Coffee Kiosk

The new In-Bay Automatic Car Wash would be a Select O wash utilizing a reclaim unit and an oil/water separator. It would be located at the existing Shoppette at the corner of Gibson Blvd. and Second Street (Figure 2-2). The Automatic Car Wash would be a 1,610 square foot building located directly east of the Shoppette and multi-product dispenser gas pumps and would also include a modular island with vacuum and trash receptacles. The Automatic Car Wash would provide additional services not currently available at the Shoppette and on Kirtland AFB. Construction of the Automatic Car Wash would occur during fiscal years (FY) 2004 and FY 2005. A Highland Tank Oil/Water Separator would be installed at the same time for the collection of sand, grit, grease and oil from operation of the car wash. A water reclaim system, reclaiming 60-100 gallons of water per wash cycle, would also be installed. Operation of the car wash would include the use of detergents and other chemicals to wash vehicles. An equipment/chemical room, located next to the car wash, would be used to store detergents and other chemicals used to operate the Automatic Car Wash.

Water effluent from the car wash would go through the oil/water separator before being released into the sanitary sewer system. Oil and grease, phosphorus, nitrogen as ammonia, nitrate plus nitrite, priority metals, and suspended settleable solids would occur in the effluent. Appendix A has a sample table of wastewater quality from operation of an in-bay automatic car wash compared to a self-service car wash.

Depending on the type of rinse-cycle, fresh water use would be about 6-12 gallons per wash and reclaimed water use would be between 60-100 gallons per wash. The car wash would operate 24 hours a day, independent of the AAFES Shoppette hours.

The new Drive-Thru Coffee Kiosk would be located in the parking lot of the Mini Mall (Bldg. 20224) directly west of First St., south of F Ave. and north of G Ave. (Figure 2-3). The proposed facility would be approximately 188 square feet. The Drive-Thru Coffee Kiosk would provide a service not currently provided on Kirtland AFB. Construction of the Drive-Thru Coffee Kiosk would take place between FY 2004 and FY 2005.



2-4

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Location of Proposed Automatic Car Wash Facility
Kirtland Air Force Base

FIGURE

2-2

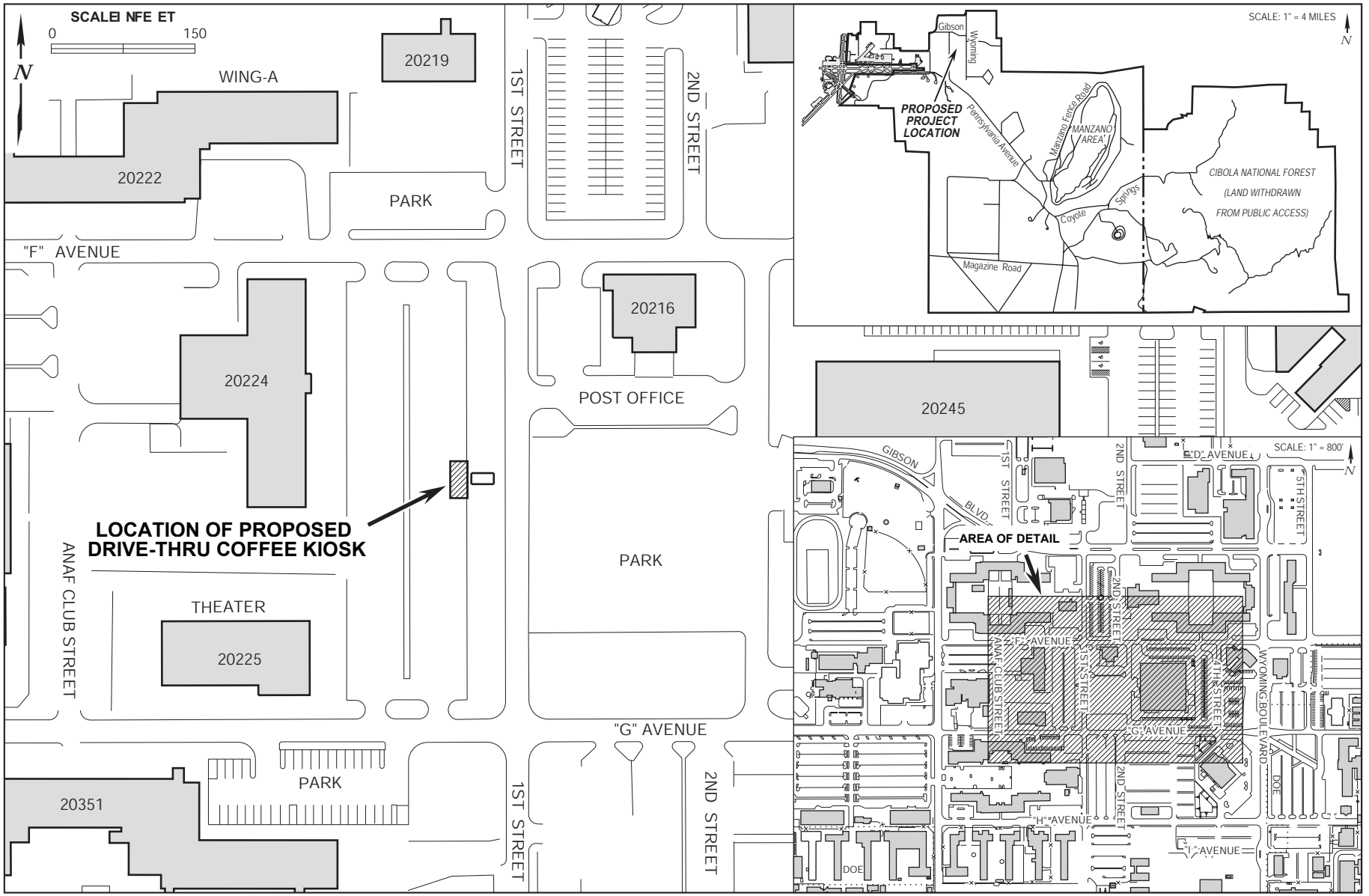

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FIGURE

EA

Location of Proposed Drive-Thru Coffee Kiosk
Kirtland Air Force Base

2-3

2.4 DESCRIPTION OF ALTERNATIVES

2.4.1 Alternative 1

Under Alternative 1 the Automatic Car Wash would be located east of the Car Care Center and north of the gas pumps (multi-product dispensers) at the Shoppette. The Shoppette and Car Care Center share the same building including entrances and exits. The Drive-Thru Coffee Kiosk would remain at the same location as for the Proposed Actions.

2.4.2 No-Action Alternative

The CEQ regulations implementing NEPA require that a "no-action" alternative be evaluated. Under this alternative, neither the Automatic Car Wash nor the Drive-Thru Coffee Kiosk would be constructed by AAFES at Kirtland AFB. No direct environmental effects would result from implementation of the No-Action Alternative.

2.5 INFORMATION COMMON TO ALL PROJECTS

2.5.1 Construction Activities

Construction of the In-Bay Automatic Car Wash would require equipment such as bulldozers, backhoes, and front-end loaders (Table 4-1 shows typical construction vehicles used). This equipment would be on site throughout periods of excavation and/or site preparation. Dump trucks would be on site intermittently, as would cement/mortar-mixers, asphalt vehicles and other construction equipment. Sufficient amounts of fuels, hydraulic fluids, and oils and lubricants required to support contractor vehicles and machinery would be stored on site during the project. Installation of the pre-fabricated Drive-Thru Coffee Kiosk would require less construction equipment than the Automatic Car Wash.

All materiel needs (e.g., steel, concrete, asphalt) would be supplied by off-site vendors. Each of the projects would require small amounts of electricity for construction activities. No natural gas or steam would be required. No soil would be removed or added at either site except for soil moved when concrete is dug up during car wash construction.

It is not yet known how many construction workers would be on site since a contractor has not yet been chosen. Typically, the average number of construction workers on a site depends on the square footage of the building to be constructed. An average would be 1-2 workers per 1,000 square foot (University of Washington 2001), but also could vary by contractor.

Non-hazardous construction debris would be transported to the Kirtland AFB landfill for disposal. Kirtland AFB, in an effort to meet Department of Air Force waste diversion standards, requests monthly reports by item description and weight of any materials removed for recycling or reuse by the contractor. An on-site dumpster would be provided by the contractor for other non-hazardous municipal solid waste (e.g., plastics, paper, and food waste) that could be generated by worker activity at the project sites.

When the dumpster is full, the debris would be transported to a permitted Subtitle D landfill. Any cardboard waste would be separated and delivered to the base landfill or the Sandia National Laboratories, Solid Waste Transfer Station where a roll-off unit is available for cardboard recycling.

In accordance with Department of Defense (DoD) Instruction 4715.4, *Pollution Prevention*, paragraph F.2.c.(3)(f), salvageable metal debris resulting from construction activities would be removed and transported to the Defense Reutilization and Marketing Office at Kirtland AFB for recycling or to any certified recycling facility. Proper measures would be used to control dust as outlined under 20.11.20.23 New Mexico Administrative Code (NMAC), *Reasonably Available Control Measures for Fugitive Dust*.

Adequate parking would be available for worker vehicles on locations at and adjacent to the project sites. Potable water would be available to the workers in coolers furnished by either the general contractor or individual crews. Restroom facilities would consist of portable chemical toilets. No additional potable water or disposition of wastewater would be required.

2.5.2 Permits and Consultations

The Proposed Actions are anticipated to disturb less than ¾ acre, however, designs for the projects are still being developed and total acreage may change slightly. A National Pollutant Discharge Elimination System Permit would be required for storm water discharges if individual construction sites (or common sites of development) would result in disturbance of one (1) to five (5) acres of total land area (small construction).

The Proposed Actions also would require a Fugitive Dust Control Permit and Fugitive Dust Control Plan Application submittal to the City of Albuquerque Environmental Health Department, Air Quality Division if the projects disturb ¾ acre of land or more. Fugitive Dust Control Permit Applications are required to be submitted at least 10 working days prior to start date of action (20.11.20 NMAC).

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CHAPTER 3
AFFECTED ENVIRONMENT

3.1 HEALTH AND SAFETY

3.1.1 Definition of Resource

Safety issues typically associated with and specific to military airfields include the potential for mid-air aircraft mishaps, aircraft collisions with objects on the ground (e.g., towers, buildings, or mountains), weather-related accidents, and bird-aircraft collisions. However, since the Proposed Actions analyzed in this Environmental Assessment (EA) do not affect the type or frequency of aircraft operations conducted at Kirtland Air Force Base (AFB) or Albuquerque International Sunport, this safety analysis focuses only on ground-based safety issues. The proposed Automatic Car Wash and Drive-Thru Coffee Kiosk would be built well outside of the runway protection zones, clear zones, accident potential zones or explosive safety zones; therefore, no further discussion of safety pertaining to these zones is provided in this EA.

Because children may suffer disproportionately from environmental health risks and safety risk, Executive Order (EO) 13045, *Protection of Children from Environmental Health Risks and Safety Risks,* was introduced in 1997. EO 13045 prioritized the identification and assessment of environmental health risks and safety risks that may affect children and ensured that federal agencies' policies, programs, activities, and standards address environmental risks and safety risks to children.

3.1.2 Existing Conditions

3.1.2.1 Safety Prepardness

Kirtland AFB has a general safety policy relating to the performance of all activities on the base. Individuals, supervisors, managers, and commanders are expected to give full support to safety efforts. Safety awareness and strict compliance with established safety standards are expected. In the event of a mishap, incidents are investigated, lessons learned are documented, and corrective action is taken. Safety is an integral part of mission performance at Kirtland AFB, and supervisors and managers are strongly encouraged to prevent mishaps. In addition, the Kirtland AFB Disaster Preparedness Operation Plan (Kirtland AFB 1993) establishes procedures to respond to and recover from disasters or accidents affecting assigned and associate organizations at Kirtland AFB, as well as the surrounding area. This plan includes procedures for responding to hazardous material spills and severe weather.

3.1.2.2 Ground Safety

All construction is required to be conducted in compliance with Air Force Instruction 91-204, *Ground Safety*.

3.2 AIR QUALITY

3.2.1 Definition of Resource

Outdoor air quality at a given location is a function of several factors, including the climate, quantity and dispersion rates of pollutants in the region, temperature, presence or absence of inversions, and topographic and geographic features of the region. For the purposes of this EA, Bernalillo County forms the region of concern for air quality. The US Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for criteria pollutants, including ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide, particulate matter equal to or less than ten micrometers in diameter, particulate matter equal to or less than 2.5 micrometers in diameter, and lead. The Clean Air Act requires that all states attain compliance through adherence to the NAAQS, as demonstrated by the comparison of measured pollutant concentrations with the NAAQS.

The NAAQS represent the maximum levels of background pollution that are considered acceptable, with an adequate margin of safety to protect public health and welfare. These pollutants are typically quantified in units of parts per million, milligrams per cubic meter (mg/m^3), or micrometers per cubic meter ($\mu g/m^3$). Table 3-1 shows the State of New Mexico and the federal NAAQS criteria.

3.2.2 Existing Conditions

3.2.2.1 Climate and Regional Air Quality

The climate in the Albuquerque area is generally mild, sunny, and dry. Air quality in and around the project area is a function of normal climatic conditions in the region, combined with airborne pollutants from a variety of sources. The Albuquerque metropolitan area and Kirtland AFB are within New Mexico's Air Quality Control Region (AQCR) 2, which is one of 8 AQCRs in the state. Region 2 includes all of northwestern New Mexico. The Albuquerque Environmental Health Department (AEHD) performs air quality functions in Albuquerque, and the Albuquerque-Bernalillo County Air Quality Control Board governs them.

3.2.2.2 Air Quality in the Project Area

The City of Albuquerque has been designated as being in maintenance status for CO as of 15 June 1996 and is currently in attainment for all other federally regulated pollutants (EPA 1996). CO levels are currently at their lowest since the 1970s (CO levels were consistently violated during the 1970s and 1980s). O_3 (composed primarily of NO_2 and volatile organic compounds from automobile emissions and industry) levels have been increasing since 1990 and exceeded standards twice in 1999 (AEHD 2000). Table 3-2 displays 1999 criteria pollutant emissions data for Bernalillo County. These are the latest data available from the EPA and the AEHD. Table 3-3 shows air emissions on Kirtland AFB in 2003 for non-exempt sources.

Table 3-1. National and New Mexico Ambient Air Quality Standards

Pollutant	Averaging Time	NAAQS Value	Standard Type
Ozone	1-hour[1]	0.12 ppm (235 µg/m^3)	Primary and Secondary
	8-hour[2]	0.08 ppm (157 µg/m^3)	Primary and Secondary
Carbon monoxide	8- hour[3]	9 ppm (10 mg/m^3)	Primary
	1-hour[3]	35 ppm (40 mg/m^3)	Primary
Nitrogen dioxide	Annual (Arithmetic mean)	0.053 ppm (100 µg/m^3)	Primary and Secondary
	24-hour	None	
Sulfur dioxide	Annual (Arithmetic mean)	0.03 ppm (80 µg/m^3)	Primary
	24-hour[3]	0.14 ppm (365 µg/m^3)	Primary
	3-hour[3]	0.50 ppm (1300 µg/m^3)	Secondary
Particulate matter equal to or less than 10 micrometers in diameter	Annual[4] (Arithmetic mean)	50 µg/m^3	Primary and Secondary
	24-hour[3]	150 µg/m^3	Primary
Particulate matter equal to or less than 10 micrometers in diameter	Annual[5] (Arithmetic mean)	15 µg/m^3	Primary and Secondary
	24-hour[6]	65 µg/m^3	Primary
Lead	Quarterly	1.5 µg/m^3	Primary and Secondary

Source: Environmental Protection Agency, Air and Radiation 2004. Title 40, Part 50 of the Code of Federal Regulations

Notes:
[1] To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.
[2] The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is <= 1, as determined by Appendix H.
The 1-hour NAAQS will no longer apply to an area one year after the effective date of the designation of that area for the 8-hour ozone NAAQS. The effective designation date for most areas is June 15, 2004. (40 Code of Federal Regulation 50.9; see Federal Register of April 30, 2004 [69 Federal Register 23996].)
[3] Not to be exceeded more than once per year.
[4] To attain this standard, the expected annual arithmetic mean particulate matter equal to or less than 10 micrometers in diameter concentration at each monitor within an area must not exceed 50 µg/m^3.
[5] To attain this standard, the 3-year average of the annual arithmetic mean particulate matter equal to or less than 2.5 micrometers in diameter concentrations from single or multiple community-oriented monitors must not exceed 15 µg/m^3.
[6] To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 65 µg/m^3.

NAAQS=National Ambient Air Quality Standard ppm=parts per million
µg/m^3=micrometers per cubic meter mg/m^3=milligrams per cubic meter

Table 3-2. Criteria Pollutant Emissions Inventory of Bernalillo County (1999)

Source Category	CO (tpy)	NO_2	$PM_{2.5}$	PM_{10}	SO_2	VOCs
Highway Vehicles[a]	129,939	13,139	277.1	370.5	520.1	10,390
Off-Road Vehicles[b]	48,580	2,625	263.47	286.87	284.75	3,446.94
Industrial Processes	1,166	8,414	188.8	310.20	3,058.38	235.9
Misc. (fugitive dust)	0	0	10,381	59,938	0	0
Waste Disposal & Recycling	6,491.9	200.88	656.74	659.46	6.83	455.37
Aircraft	996	451	6.61	9.59	43.3	149
Railroads	25.3	252	5.67	6.31	14.7	10.8
Area Sources[c]	3,341.67	1,829.2	598.9	613.40	106.33	10,034.38
Agriculture & Forestry	0	0	18.7	111	0	0
Storage & Transport	0	0	0	0	0	2,118
TOTAL	**190,540**	**26,911**	**12,398**	**62,305**	**4,034.39**	**26,842**

Source: Environmental Protection Agency 2002.
Notes: [a] Highway vehicles include: motorcycles, light and heavy duty gasoline and diesel vehicles and trucks.
[b] Off Highway vehicles include non-road gasoline and diesel vehicles.
[c] Area sources include residential wood burning, natural gas combustion and propane combustion, electric utilities, solvent utilization (dry cleaning and surface coating), as well as other small stationary point sources.
CO=carbon monoxide tpy=tons per year NO_2=nitrogen dioxide
$PM_{2.5}$=particulate matter equal to or less than 2.5 micrometers in diameter
PM_{10}=particulate matter equal to or less than 10 micrometers in diameter
SO_2=sulfur dioxide VOCs=volatile organic compounds

Table 3-3. Summary of Calendar Year 2003 Air Emissions for Non-Exempt Sources on Kirtland Air Force Base

Pollutant	Emissions	
	Actual[b] (tpy)	Allowable[b] (tpy)
CRITERIA POLLUTANTS AND PRECURSORS		
Carbon monoxide	16.7	123.6
Nitrogen dioxide	19.4	187.3
Particulate Matter	13.4	42.0
Particulate Matter equal to or less than 10 micrometers in diameter[a]	13.1	40.0
Sulfur dioxide	2.7	20.4
Volatile organic compounds	6.2	166.3
Total Hazardous Air Pollutants	4.0	12.9

Source: US Air Force 2004a.
Notes: [a] Particular matter ≤10 µm is a subset of particulate matter.
[b] These cumulative totals include emissions from 20.11.40 New Mexico Administrative Code - Source Registration, 20.11.41 New Mexico Administrative Code - Authority-to-Construct permitted sources and Title V sources.
tpy = tons per year

3.3 NOISE

3.3.1 Definition of Resource

Noise is defined as unwanted sound or, more specifically, as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying (Federal Interagency Committee on Noise 1992). Human response to noise varies according to the type and characteristics of the noise, distance between the noise source and the receptor, sensitivity of the receptor and time of day.

Due to wide variations in sound levels, sound is measured in decibels (dB), which is a unit of measure based on a logarithmic scale (e.g., 10-dB increase corresponds to a 100 percent increase in perceived sound). Under most conditions, a 5-dB change is necessary for noise increases to be noticeable to humans (EPA 1978). Sound measurements are further refined by using an A-weighted decibel scale (dBA) that emphasizes the range of sound frequencies that are most audible to the human ear (between 1,000 and 8,000 cycles per second). Ambient background noise in urbanized areas typically varies from 60 to 70 dBA, but can be higher; suburban neighborhoods experience ambient noise levels of approximately 45 to 50 dBA (EPA 1978). Table 3-4 identifies noise levels associated with common indoor and outdoor activities and settings and identifies subjective human judgment of noise levels, specifically the perception of noise levels doubling or being halved.

3.3.2 Existing Conditions

Localized sources of noise in the project area, both on and off base, include military and civilian aircraft operations at Albuquerque International Sunport and vehicle traffic at Kirtland AFB. The Proposed Actions assessed in this EA would have no effect on aircraft noise, but aircraft noise is mentioned because commercial and military aircraft operations at Albuquerque International Sunport are the primary sources of noise in the area. The Sunport Noise Committee works with Kirtland AFB to manage the noise levels around the airport from military aircraft and allows engine runups for maintenance only in remote areas of the airport (City of Albuquerque 2003). The Proposed Actions locations would be outside of the Albuquerque International Sunport 65 day-night average sound level noise contours.

Table 3-4. Typical A-Weighted Sound Levels

Noise Source	A-Weighted Sound Level in Decibels	Noise Environment	Subjective Evaluations
Near Jet Engine	140	Deafening	128 times as loud
Civil Defense Siren	130	Threshold of Pain	64 times as loud
Hard Rock Band	120	Threshold of Feeling	32 times as loud
Accelerating Motorcycle at a few feet away	110	Very Loud	16 times as loud
Pile Driver; Noisy Urban Street/Heavy City Traffic	100	Very Loud	8 times as loud
Ambulance Siren; Food Blender	95	Very Loud	
Garbage Disposal	90	Very Loud	4 times as loud
Freight Cars; Living Room Music	85	Moderately Loud	
Pneumatic Drill; Vacuum Cleaner	80	Moderately Loud	2 times as loud
Busy Restaurant	75	Moderately Loud	
Near Freeway Auto Traffic	70	Moderately Loud	
Average Office	60	Moderate	½ times as loud
Suburban Street	55	Moderate	
Light Traffic; Soft Radio Music in Apartment	50	Quiet	¼ times as loud
Large Transformer	45	Quiet	
Average Residence Without Stereo Playing	40	Faint	⅛ times as loud
Soft Whisper	30	Faint	
Rustling Leaves	20	Very Faint	
Human Breathing	10	Very Faint	Threshold of Hearing

Source: LSA Associates, Inc. 2002.

3.4 LAND USE AND VISUAL RESOURCES

3.4.1 Definition of Resource

Land use is the classification of either natural or human-modified activities occurring at a given location. Natural land use includes rangeland and other open or undeveloped areas. Human-modified land use classifications include residential, commercial, industrial, communications and utilities, agricultural, institutional, recreational, and other developed areas. Land use is regulated by management plans, policies, regulations, and ordinances (e.g. zoning) that determine the type and extent of land use allowable in specific areas and protect specially designated or environmentally sensitive areas.

Visual resources are defined as the natural and manufactured features that constitute the aesthetic qualities of an area. These features form the overall impression that an observer receives of an area (i.e. its landscape character). An area's susceptibility to visual impacts is related to visual sensitivity. Highly sensitive resources include national parks, recreation areas, historic sites, wild and scenic rivers, designated scenic roads and other areas specifically noted for aesthetic qualities.

3.4.2 Existing Conditions

3.4.2.1 Kirtland Air Force Base Land Use

Land use around the proposed locations consists primarily of administrative/research, military family housing, industrial, and outdoor recreation. Figure 3-1 shows existing land use on Kirtland AFB and the surrounding area. In the vicinity of Kirtland AFB, land use varies from urban to open rangeland. Immediately north of the installation, land use is predominantly urban and suburban. Open spaces and forest land are present northeast and east of the base. West of Kirtland AFB, land use is a mixture of urban areas and open space. South of the installation, the Isleta Pueblo lands are generally open space and forest or vacant land.

3.4.2.2 Existing Visual Resources

The visual environment in the vicinity of the project areas is characteristic of a community-developed area on a military installation with structures similar to those proposed by the Army & Air Force Exchange Service (AAFES). The area surrounding the installation varies from urban to open rangeland and the Cibola National Forest to the east.

3.5 TRANSPORTATION AND UTILITIES

3.5.1 Transportation and Circulation

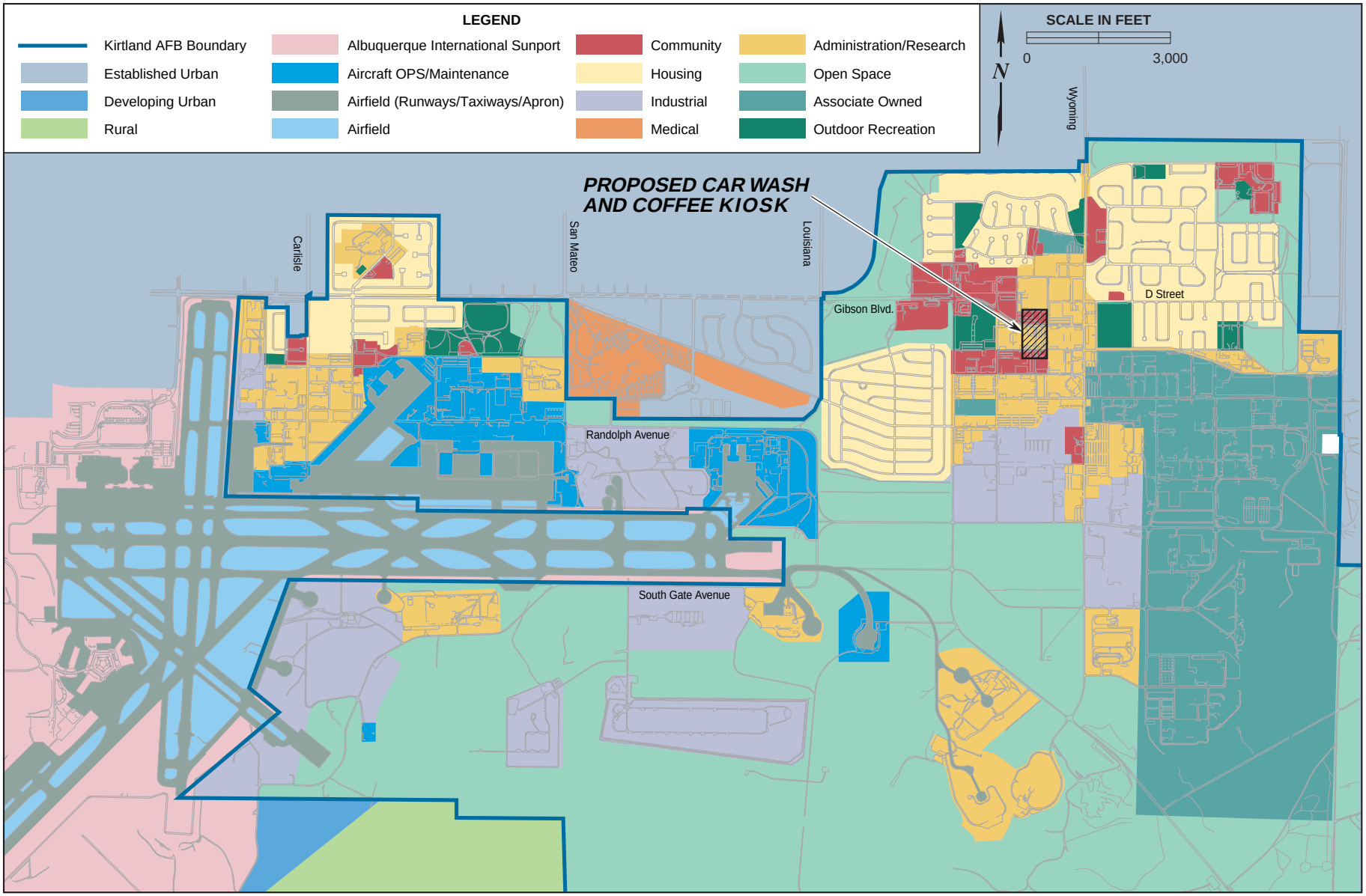
3.5.1.1 Definition of Resource

Transportation and circulation refer to the movement of vehicles throughout a roadway network. Roadway operating conditions and the capacity of the system to accommodate vehicles, are described in terms of volume-to-capacity (V/C) ratio, which is a comparison of average daily traffic (ADT) volume to roadway capacity (Table 3-5). The V/C ratio corresponds to a Level of Service (LOS) rating, ranging from free-flowing traffic conditions (LOS "A") for a V/C of less than 60 percent, to congested "stop-and-go" conditions (LOS "F") for a V/C at or near 100 percent.

Table 3-5. Level of Service and Volume-to-Capacity Ratio Descriptions

LOS	Quality of Traffic Operation	V/C Ratio
A	Free flow. Very good.	<0.60
B	Stable flow. Good.	0.61 - 0.70
C	Approaching unstable flow. Poor.	0.71 - 0.80
D	Unstable flow. Very poor.	0.81 - 0.90
E	Forced flow. Approaching failure.	0.91 - 1.00
F	Long delays. Failure.	≥1.00

Source: Transportation Research Board 2000. Highway Capacity Manual, Highway Research Board Special Report 209.
1994. National Academy of Sciences, Washington, DC.
Notes: LOS=Level of Service V/C=volume-to-capacity



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Existing Land Use on Kirtland Air Force Base and the Surrounding Area

FIGURE

3-1

3.5.1.2 Existing Conditions

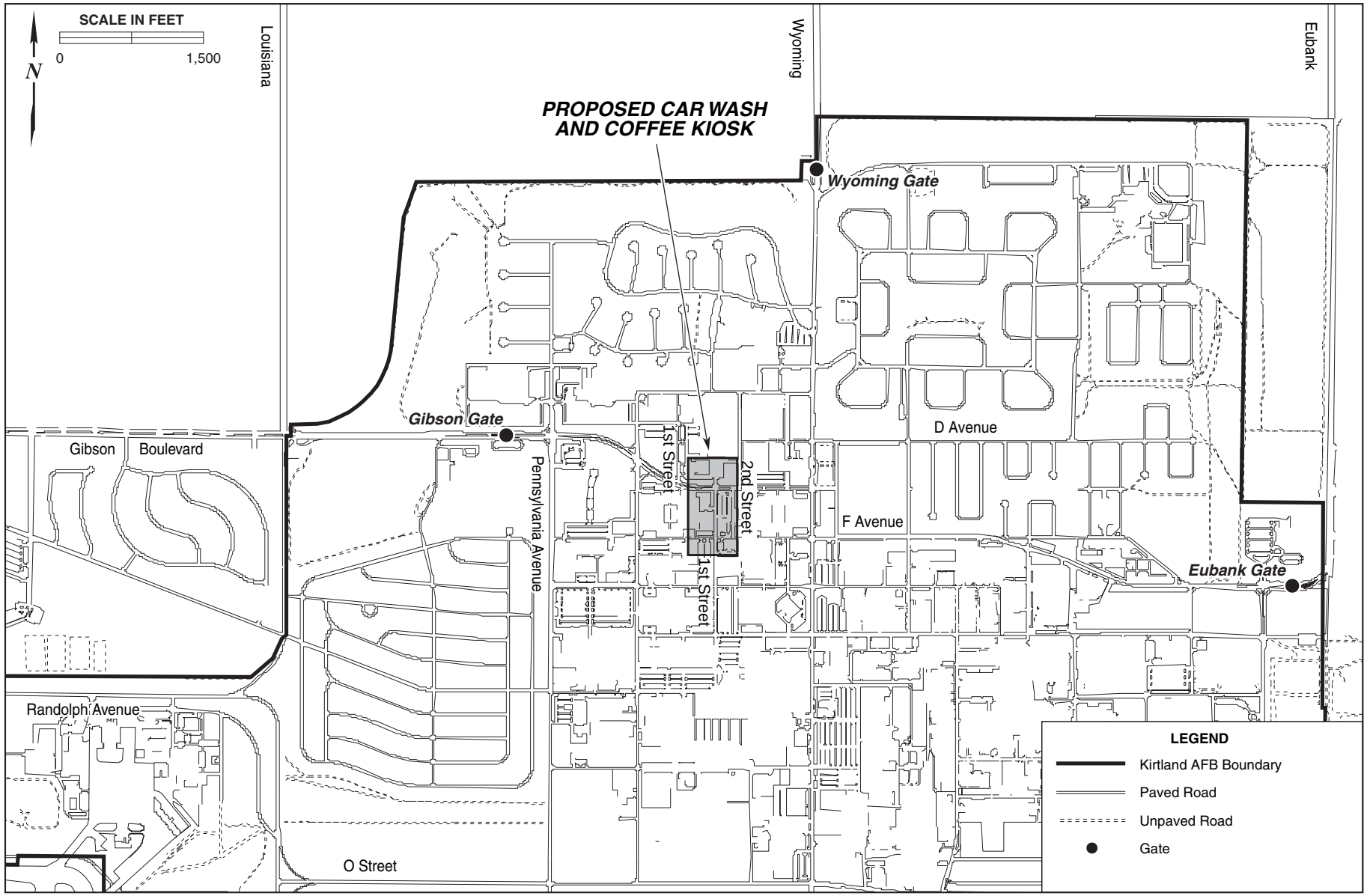
The Automatic Car Wash would be located off of Gibson Blvd. and Second St., a couple of blocks west of Gibson Blvd. and Wyoming, where traffic congestion occurs during peak periods. Speed limits in the project area are between 30-35 miles-per-hour (mph). The Drive-Thru Coffee Kiosk would be located off F Ave. and First St. Speed limits in this area are 25 mph. Figure 3-2 shows the transportation network and access gates in the project area.

Table 3-6 shows the traffic volumes for the 12 major intersections on Kirtland AFB. Because the base is the largest employer in the Albuquerque area, it is the principal destination for commuters in the southern side of the city. As a result, traffic tends to converge on the base gates with high ADT volumes and occasionally poor LOS ratings.

Table 3-6. Kirtland Air Force Base Traffic Analysis Data

Intersection	ADT [a]	Peak Hour	Peak Car/hr.	Avg. Car/hr.	LOS[b]
Carlisle Blvd. and Aberdeen Drive	4,512	6:45 a.m.	903	188	B
San Mateo Blvd. and Randolph Ave.	6,768	6:45 a.m.	903	282	B
Pennsylvania St. and Gibson Blvd	13,512	4:00 p.m.	1,803	563	B (a.m.) C (p.m.)
Truman and Aberdeen Dr.	8,904	6:45 a.m.	1,083	371	A (a.m.) B (p.m.)
Pennsylvania St. and Hardin Dr.	8,976	7:00 a.m.	1,196	374	B
Texas St. and Gibson Blvd.	9,720	4:00 p.m.	1,299	405	B
Wyoming Blvd. and Gibson Blvd.	14,016	4:00 p.m.	1,869	584	C
Wyoming Blvd. and F Ave.	14,016	7:00 a.m.	1,870	584	B
Wyoming Blvd. and Hardin Dr.	8,832	7:00 a.m.	1,176	368	B
9th St. and Hardin Dr.	6,480	7:00 a.m.	867	270	B
14th St. and Hardin Dr.	9,072	7:00 a.m.	1,211	378	D
20th St. and Gibson Blvd.	16,394	6:45 a.m.	2,490	812	A (a.m.) B (p.m.)

Source: Kirtland Air Force Base 1999.
Notes: [a] ADT is defined as the number of vehicles in a 24-hour period.
[b] LOS (from Highway Capacity Manual, Highway Research Board Special Report 209, National Academy of Services, Washington, DC).



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Kirtland Air Force Base Transportation Network and Access Gates

FIGURE

3-2

3.5.2 Utilities

3.5.2.1 Definition of Resource

Utilities are services provided including water, electricity, gas, sanitary sewer, telephone, solid waste disposal, and wastewater.

3.5.2.2 Existing Conditions

Water Supply. Kirtland AFB's water supply comes from seven installation water wells and two interconnected distribution systems. The installation has on-site water storage capacity including a fire-fighting water supply. Water is also purchased from the City of Albuquerque on an as-needed basis. Water main lines located in the area of the proposed locations include lines along 2nd St. and in the parking lot area of the AAFES Shoppette. Water main lines in the area of the proposed coffee kiosk are located along 1st St., F Av., and G Ave. The closest water tank for both locations is off of K Ave. between Pennsylvania St. and Texas St.

Electric Power. Electric power for Kirtland AFB is purchased from the Public Service Company of New Mexico (PNM). Electrical mains in the Proposed Actions locations run along 2nd St. adjacent to the proposed location for the Automatic Car Wash and 1st St. and F Ave. adjacent to the Drive-Thru Coffee Kiosk location. There is an electrical substation located off H Ave. between 2nd St. and Wyoming Blvd.

Natural Gas. The natural gas supplier for Kirtland AFB is Wasatch Energy LLC and is delivered in PNM Gas Services pipelines to facilities and housing on the installation. Natural gas lines in the areas of the Proposed Actions are located along Gibson Blvd. and 2nd St. for the Automatic Car Wash and along G Ave. for the Drive-Thru Coffee Kiosk. There are also steam lines in the parking lot area of the AAFES Shoppette where the Automatic Car Wash would be located and off of Gibson Blvd. Steam lines near the Drive-Thru Coffee Kiosk location are along F Ave. and also along 1st St.

Sanitary Sewer. Sanitary waste flows to the City of Albuquerque's Southside Water Reclamation Plant which can treat 60 million gallons per day. Sanitary sewer lines for the Automatic Car Wash are located along 2nd St. For the Drive-Thru Coffee Kiosk area they are located across from the mini mall parking lot and also along G Ave. The Albuquerque Reclamation Plant does not have discharge limits for wastewater. However, a surcharge fee does apply for Chemical Oxygen Demand over 500 milligrams per liter (mgl) and Total Suspended Solids over 330 mgl.

Telephone Service. Kirtland AFB operates its own telephone switching system without any contracts with local telephone companies.

Solid Waste Disposal Service. All refuse for Kirtland AFB is collected by an outside contractor that disposes of solid waste at a landfill off the installation.

Wastewater. Kirtland AFB does not have separate industrial and municipal wastewater systems. The City of Albuquerque treats all of the sanitary sewage produced by Kirtland AFB. By the end of 2001, the base contributed 2.5 million gallons per day of wastewater to the city facility (US Air Force [USAF] 2002). An industrial pretreatment

program administered by the City of Albuquerque regulates industrial discharges from the base to sewer lines. A City of Albuquerque wastewater permit was reissued to Kirtland AFB in 2001 under the Sewer Usage and Wastewater Control Ordinance, bringing the base's total number of wastewater permits issued by the city to four. Kirtland AFB's permits are issued by the City of Albuquerque's publicly owned treatment works, which is currently regulated by an National Pollutant Discharge Elimination System (NPDES) Permit. Four manholes located on the base are used for monitoring discharged water quality (USAF 1990). Kirtland AFB has an NPDES General Storm Water permit for industrial activities.

3.6 GEOLOGICAL RESOURCES

3.6.1 Definition of Resource

The geological resources of an area consist of all soil and rock materials. Soils refer to unconsolidated earthen material overlying bedrock or other parent material. Since the Proposed Actions analyzed in this document would only result in minor surface disturbance of soils, only soil properties pertaining to erosion are described in this section. The geology of an area also includes mineral deposits, notable landforms, tectonic features, and fossil remains.

3.6.2 Existing Conditions

3.6.2.1 Geology

Kirtland AFB is situated in the eastern portion of the Albuquerque Basin, which is one of the largest of a series of north-trending basins in the region and measures 90 miles long and 30 miles wide (Fenneman 1931). The basin extends from the gently sloping area near the Rio Grande River to the steep foothills and slopes of the Manzanita and Manzano Mountains. Different landforms within the basin include mesas, benches, stream terraces, low hills, ridges, and graded alluvial slopes (Lozinsky et al. 1991; Kelley 1977; Kelley and Northrup 1975). Elevations at Kirtland AFB range from 5,200 feet in the west to almost 8,000 feet in the Manzanita Mountains. The Proposed Actions are located on relatively flat terrain (i.e. less than a 5 percent slope) at 5,390 feet.

3.6.2.2 Soils

The primary soil type found at the site of the Proposed Actions is Tijeras gravelly fine sandy loam. This type of soil is used for community development and is suitable for building. Soil permeability for this type is moderate and the water and wind erosion hazard is moderate to severe.

3.7 WATER RESOURCES

3.7.1 Definition of Resource

Water resources include all surface waters and groundwater and their availability for human use. For this analysis, those water resources located within the proposed projects area and the watershed areas affected by existing and potential runoff, including an area's

potential for flooding (100-year floodplains), were investigated. Surface water resources comprise lakes, rivers, and streams and are important for economic, ecological, recreational, and human health reasons. Groundwater comprises the subsurface hydrologic resources of the physical environment and is an essential resource in many areas; groundwater is commonly used for potable water consumption, agricultural irrigation, and industrial applications. Groundwater properties are often described in terms of depth to aquifer, aquifer or well capacity, water quality, and surrounding geologic composition.

Other issues relevant to water resources include watershed areas affected by existing and potential runoff and hazards associated with 100-year floodplains. Floodplains are belts of low, level ground present on one or both sides of a stream channel and are subject to periodic inundation by floodwater. Inundation dangers associated with floodplains have prompted federal, state, and local legislation that limit development in these areas largely to recreation and preservation activities.

3.7.2 Existing Conditions

3.7.2.1 Surface Water

The Rio Grande River is the major surface hydrologic feature in central New Mexico, flowing north to south through Albuquerque, approximately 5 miles west of Kirtland AFB. Minor surface water bodies exist on the East Mesa, but the nearest is about 3 miles southeast of the Proposed Actions locations. East Mesa surface water occurs in the form of storm water flows that drain into small gullies when it rains. The primary surface channels that drain runoff from Kirtland AFB to the Rio Grande River are the Tijeras Arroyo and Arroyo del Coyote. These arroyos are water-carved channels that are dry for most of the year. Precipitation reaches these arroyos through a series of storm drains, flood canals, and unnamed smaller arroyos. Tijeras Arroyo crosses the northern boundary of Kirtland AFB ¾ of a mile south southeast of the Eubank Gate near Department of Energy Area II and then flows south of Albuquerque International Sunport, draining eventually into the Rio Grande River (USAF 1991). Arroyo del Coyote collects water from Madera, Lurance and Sol se Mete Canyons in the Manzanita Mountains and drains into Tijeras Arroyo approximately one mile west of the Tijeras Arroyo Golf Course.

Both Arroyo del Coyote and Tijeras Arroyo flow intermittently during heavy thunderstorms and spring snowmelt (US Army Corps of Engineers [USACE] 1979a). However, nearly 95 percent of the precipitation that flows through the Tijeras Arroyo evaporates before it reaches the Rio Grande River. The remaining 5 percent is equally divided between runoff and groundwater recharge (USAF 1991). The Proposed Actions would not be built near any surface drainage channels on base.

Jurisdictional wetlands are those subject to regulatory authority under Section 404 of the Clean Water Act (CWA) and EO 11990, *Protection of Wetlands*. Wetlands are defined by the USACE (Federal Register 1982) and EPA (Federal Register 1980) as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a

prevalence of vegetation typically adapted for life in saturated soil conditions" (33 Code of Federal Regulations [CFR] § 328.3(b), 1984). The nearest wetland is 6 miles southeast of the Proposed Actions locations.

3.7.2.2 Floodplains

Flooding on Kirtland AFB generally occurs between May and October during high-intensity thunderstorms (USACE 1979b). Tijeras Arroyo and Arroyo del Coyote floods are characterized by high peak flows, small volumes, and short duration. A 100-year floodplain encompasses these arroyos and follows their paths. The Proposed Actions are located more than 1 mile north of the Tijeras Arroyo 100-year floodplain.

3.7.2.3 Groundwater

Kirtland AFB is located within the limits of the Rio Grande Underground Water Basin, which has been defined by the State of New Mexico as a natural resource area and has been designated as a "declared underground water basin." The state regulates it as a sole source of potable water. The average depth to groundwater beneath Kirtland AFB is 450 to 550 feet. The Rio Grande Basin's source of groundwater is the Santa Fe Aquifer. Albuquerque relies on groundwater as its sole potable water source.

3.7.2.4 Wetlands

The USACE Albuquerque District has delineated wetlands on Kirtland AFB, including a description of waters of the US regulated pursuant to Section 404 of the CWA, and a restatement of the location of the 100-year floodplain determined in a 1979 study (USACE 1995). There are no wetlands or riparian areas within one mile of the Proposed Actions.

3.7.2.5 Water Supply at Kirtland Air Force Base

Water on base is supplied by seven installation water wells and two separate, but interconnected distribution systems. These systems were developed separately for Sandia Base and Kirtland AFB before they were combined into a single installation. Water is also purchased from the City of Albuquerque. Water purchased from the city is primarily for use in meeting peak demands, for providing water when wells are out of service, and to keep water production within water rights allocations.

3.8 BIOLOGICAL RESOURCES

3.8.1 Definition of Resource.

Biological resources include native, naturalized, or introduced plants and animals and the habitats in which they occur. Protected species are defined as those listed as threatened, endangered, proposed, or candidate for listing by the US Fish and Wildlife Service (USFWS), New Mexico Energy, Minerals, and Natural Resources Department (NMEMNRD), and/or the New Mexico Department of Game and Fish (NMDG&F). Federal species of concern, formerly known as candidate category two species, are not protected by law; however, these species could become listed, and therefore are

considered when addressing impacts of an action on biological resources. The New Mexico Natural Heritage Program maintains a listing of threatened or endangered species. NMEMNRD has the responsibility for identifying and listing sensitive plant species. Animal species of special concern to the NMDG&F are also considered.

Sensitive habitats include those areas designated by the USFWS as critical habitat protected by the Endangered Species Act (ESA) and sensitive ecological areas as designated by state or federal rulings. Sensitive habitats also include plant communities that are unusual or of limited distribution, and important seasonal use areas for wildlife (e.g., migration routes, breeding areas, crucial summer/winter habitats).

3.8.2 Existing Conditions

Kirtland AFB lies at the intersection of four major North American physiographic and biotic provinces: the Great Plains, Great Basin, Rocky Mountains, and Chihuahuan Desert. Vegetation and wildlife found within Kirtland AFB are influenced by each of these provinces, the Great Basin being the most dominant.

3.8.2.1 Vegetation

The vegetation scheme at Kirtland AFB consists of four main plant communities: grassland, pinyon-juniper woodland, ponderosa pine woodland, and riparian/wetland/arroyo. Transitional areas are found between these communities and contain a mixture of representative species from the bordering areas. Two transitional zones have been delineated in the grassland community and include the juniper woodland and sagebrush steppe. Both the grassland and pinyon-juniper woodland are the dominant vegetative communities at Kirtland AFB. Only the grassland community is discussed in this EA, as it is the only vegetation community encompassing the developed area of the base where the Proposed Actions would occur.

The grassland community occurs between elevations of 5,200 and 5,700 feet in the southwestern and north-central portions of Kirtland AFB, although it can be found as high as 6,900 feet at some base locations. Vegetation typical of the grassland community at Kirtland AFB includes broom snakeweed (*Gutierrezia sarothrae*), Great Plains yucca (*Yucca glauca)*, Indian ricegrass (*Aehnatherum hymenoides*), purple three-awn (*Aistida pupurea*), black grama (*Bouteloua eriopoda*), blue grama (*Bouteloua gracilis*), galleta (*Pleuraphis jamesii*), foxtail barley (*Hordeum jubatum*), four-wing saltbush (*Atriplex canescens*), sand sagebrush (*Artemisia filifolia*), needle-and-thread grass (*Hesperostipa comata*), globemallows (*Sphaeralcea* spp.), Siberian elm (*Ulmus pumila*), Mormon tea (*Ephedra trifurca*), New Mexican groundsel (*Packera neomexicanus*), ring muhly (*Muhlenbergia torreyi*), plains prickly-pear (*Opuntia polyacantha*), and bottlebrush squirrel tail (*Elymus elymoides*).

3.8.2.2 Wildlife

Wildlife inhabiting the grassland community at Kirtland AFB is typical of species inhabiting the central New Mexico region.

Common birds associated with the grassland association at Kirtland AFB include horned lark (*Eremophila alpestris*), scaled quail (*Callipepia squamata*), mourning dove

(*Zenaida macroura*), greater roadrunner (*Geococcyx californianus*), American crow (*Corvus brachyrhynchos*), northern mockingbird (*Mimus polyglottos*), curved-billed thrasher (*Toxostoma curvirsostre*), lark sparrow (*Chordestes grammacus*), black-throated sparrow (*Amphispiza bilineata*), western meadowlark (*Sturnella neglecta*), brown-headed cowbird (*Molothrus ater*), and house finch (*Carpodacus mexicanus*).

The birds of prey, or raptors, most commonly found in the grasslands include northern harrier (*Circus cyaneus*), western burrowing owl (*Athene cunicularia* spp. *hypugaea*), red-tailed hawk (*Buteo jamaicensis),* American kestrel (*Falco sparverius*), prairie falcon (*F. mexicanus*), long-eared owl (*Asio otus*), and great horned owl (*Bubo virginianus*). A common scavenger is the turkey vulture (*Cathartes aura*).

The grassland association has a mammal community dominated by rodents, rabbits, and hares. These include the desert cottontail (*Sylvilagus audubonii*), Gunnison's prairie dog (*Cynomys gunnisoni*), white-footed deer mouse (*Peromyscus maniculatus*), silky pocket mouse (*Perognathus flavus*), Merriam's kangaroo rat (*Dipodomys merriami*), and the northern grasshopper mouse (*Onychomys leucogaster*). Mammalian predators found in the grassland association include the coyote (*Canis latrans*), badger (*Taxidea taxus*), kit fox (*Vulpes macrotis*), striped skunk (*Mephitis mephitis*) and bobcat (*Lynx rufus*).

A variety of amphibians and reptiles are found within the grassland association. Many of these species have extensive periods of dormancy during dry conditions and rapid breeding cycles when temporary ponds occur after rains. Amphibians and reptiles found on the grasslands at Kirtland AFB include the Woodhouse toad (*Bufo woodhousii*), New Mexico spadefoot (*Spea multiplicata*), coachwhip snake (*Masticophis flagellum*), whiptail lizards (*Cnemidophorus* spp.), lesser earless lizard (*Holbrookia maculata*), and the western rattlesnake (*Crotalus viridis*).

3.8.2.3 Threatened and Endangered Species

Seventeen federal or state listed threatened or endangered species could occur in Bernalillo County. Of these, only eight occur at Kirtland AFB. In addition, seven federal species of concern and one state sensitive plant species inhabit or potentially inhabit the base. Federally threatened and endangered species are legally protected under the ESA. In New Mexico, threatened and endangered animal species are protected by the New Mexico Wildlife Act. The NMEMNRD maintains listings of state threatened and endangered plants, which are protected under the New Mexico Endangered Plant Species Act. These species and their potential to occur on base are listed in Appendix B.

Five special status species are known to inhabit Kirtland AFB. The state threatened gray vireo is known to nest at the installation in the juniper woodland community. This community is located more than five miles east of the Proposed Actions. Three federal species of concern have been recorded as occurring at Kirtland AFB: western burrowing owl, loggerhead shrike, and Texas horned lizard. Loggerhead shrikes are found in the grassland and shrublands of the base, but generally are not found in developed areas. The western burrowing owl inhabits abandoned prairie dog burrows which are found in vacant lots in the developed area of the base and throughout the grasslands. Currently, no burrowing owl nesting sites are present at the location of the Proposed Actions (Finley 2004). The Texas horned lizard has been observed at the base, but this record may be the

result of released or escaped individuals (Degenhardt et al. 1996). The Santa Fe milkvetch, a state sensitive species, has been documented in the southwestern grasslands of the base, but does not occur in the developed area.

The Proposed Actions are located in the middle of a heavily developed portion of the base and, as a result, very few sensitive species are likely to be found in the area. The bald eagle, ferruginous hawk, spotted bat, American peregrine falcon, and the Baird's sparrow are not known to utilize the base for any extended periods of time but may migrate through the area at certain times of the year. The New Mexican jumping mouse is unlikely to inhabit Kirtland AFB since its habitat of well developed wetland/riparian areas is not present at the installation. Both the Mexican spotted owl and the northern goshawk have the potential to exist in the Withdrawal Area, but this area is located more than five miles east of the Proposed Actions.

3.9 CULTURAL RESOURCES

3.9.1 Definition of Resource

Historic properties (i.e., significant cultural resources) are classified as buildings, sites, districts, structures, or objects. A building is created to shelter any form of human activity. A structure is distinguished from a building in that it is a construction designed for purposes other than creating human shelter. Objects are constructions that are primarily artistic in nature or are relatively small and simply constructed. A site is the location of a significant event, a prehistoric or historic activity, or a building or structure whose location possesses value. A district is a concentration or linkage of sites, buildings, structures, or objects that are united historically or aesthetically by plan or development.

The criteria for establishing significance are set forth in Title 36 CFR Part 60.4. Procedures for the application of the National Register criteria for evaluation are found in various National Park Service bulletins. These bulletins provide guidelines so that decisions concerning significance, integrity, and treatment can be reliably made.

Department of Defense (DoD) Directive 4710.1, *Archeological and Historic Resources Management*, sets guidelines for the protection and management of cultural resources, and requires compliance and coordination with National Environmental Policy Act, the National Historic Preservation Act (NHPA) of 1966, as amended, and related federal standards and authorities. The DoD Annotated Policy Document for the American Indian and Alaska Native Policy (October 1999) established DoD principles for interacting and working with federally recognized American Indian and Alaskan Native tribal governments. EO 13175, *Consultation and Coordination with Indian Tribal Governments*, establishes consultation and collaboration procedures with tribal officials for policies or actions that may have substantial direct effects on one or more Indian tribes.

Under Section 106 of the NHPA the USAF is required to access the effects of undertakings prior to their initiation to ensure that there will be no adverse effects on historic properties (36 CFR 800). Section 110 of the NHPA requires the USAF to

complete an inventory of historic properties located on its land (36 CFR 60, 63, 78, 79, and 800).

3.9.2 Existing Conditions

Over 300 historic and prehistoric cultural resources have been recorded on Kirtland AFB. These include historic buildings, structures, and sites dating from European contact, ca. AD 1540, through the Cold War, ca. AD 1945-1991. Prehistoric sites dating from the Paleo-Indian Period to the Pueblo Period also have been recorded.

The Proposed Actions are both proposed to be located in the developed portion of the base in heavily disturbed areas. No known cultural resources would be disturbed by implementation of the proposals.

3.10 SOCIOECONOMICS

3.10.1 Definition of Resource

Socioeconomics are defined as the basic attributes and resources associated with the human environment. A Region of Influence (ROI) is defined as the geographic area or region wherein the project-induced changes to the socioeconomic environment would occur (Canter 1996). The ROI for the Proposed Actions is Bernalillo County. Socioeconomic activity can encompass many areas such as population trends, economic history, employment, income levels, land-use patterns, land values, tax levels, housing characteristics, public services (i.e., law enforcement, utilities, fire protection), educational resources, transportation systems, community attitudes and lifestyles, recreation and tourism, and areas of unique significance. The only socioeconomic component that would experience site specific environmental changes as a result of the Proposed Actions is the economy, which is discussed below.

In 1994, EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* was issued to focus attention of federal agencies on human health and environmental conditions in minority and low-income communities and to ensure that disproportionately high and adverse human health or environmental effects on these communities are identified and addressed. The Presidential Memorandum that accompanied EO 12898 states that federal agencies "shall analyze the environmental effects, including human health, economic and social effects of federal actions including effects on minority and low-income populations." To provide a thorough environmental justice evaluation, particular attention is given to the distribution of race and poverty status in areas potentially affected by implementation of a proposed action.

3.10.2 Existing Conditions

New Mexico and the ROI represent a diverse economy. Nonagricultural employment and the transportation and services industries represent the largest growth sector in New Mexico and in the ROI. Also, tourism has become one of New Mexico's largest industries; according to the Tourism Association of New Mexico, tourism is a

$3.9 billion industry. Major employers within the ROI include the state's largest university, as well as medical and government facilities.

3.10.2.1 Economy within the Region Of Influence

As the largest employer in New Mexico, Kirtland AFB plays an important role in the economy of the local area or Economic Impact Region (EIR). The EIR is defined as all counties within a 50-mile radius of the center of the base. Kirtland AFB had approximately 22,000 employees in Fiscal Year (FY) 2003 (USAF 2004b). The goods and services purchased by base employees in the local area create secondary jobs and wages, further adding to its total economic importance. The economic contribution (dollar impact) of Kirtland AFB to the EIR in FY 2003 was estimated at over $3 billion (USAF 2004b).

The State of New Mexico ranks 47th among the 50 states in terms of per capita income. In 2003, New Mexico's per capita income was $18,533. In Bernalillo County the per capita income was $21,557 (US Census Bureau 2004a and b). Annual average unemployment rates in 2004 within the ROI were 4.3 percent in Bernalillo County compared to 5.0 percent for the State of New Mexico (New Mexico Department of Labor 2005). Table 3-7 shows employment in Bernalillo County for the first two quarters of 2004.

3.10.2.2 Kirtland Air Force Base

Kirtland AFB expenditures in FY 2003, including payroll, totaled over $2 billion. Total economic impact from the annual operating expenditures from Kirtland AFB was estimated to be over $3 billion. Table 3-8 provides additional information relating to the economic impact of Kirtland AFB activities on the local community (USAF 2004b).

Employment at Kirtland AFB totaled 22,000 at the end of FY 2003. The DoD work force reached 5,240, of which 4,300 employees were active duty military, 940 reserve, and Air National Guard personnel. Federal civilian employees including contract civilians included 17,100 by the end of FY 2003.

Table 3-7. Employment in Bernalillo County for 2004*

Industry	Bernalillo County			
	1st Quarter 2004	Percent of Total	2nd Quarter 2004	Percent of Total
Total Agriculture	176	100%	191	100%
Total Nonagricultural Employment	307,725	100%	314,813	100%
Manufacturing	14,852	4.8%	15,073	4.8%
Mining	226	.07%	57	0.02%
Construction	21,190	6.9%	22,767	7.2%
Transportation & Public Utilities	7,903	2.6%	7,883	2.5%
Wholesale & Retail Trade	49,143	16%	49,604	15.76%
Information/Communications	8,932	2.9%	8,729	2.8%
Finance Insurance and Real Estate	15,875	5.2%	16,032	5.1%
Professional and Business Services	54,849	17.8%	56,079	17.8%
Education and Health Services	36,199	11.76%	37,423	11.9%
Leisure and Hospitality	31,715	10.13%	33,426	10.62%
Other Services & Miscellaneous	8,932	2.9%	9,129	2.9%
Government	57,909	18.8%	58,611	18.9%

Source: New Mexico Department of Labor 2005.
*First and Second Quarter data are the only data currently available for Bernalillo County.

Table 3-8. Local Economic Impact, Kirtland Air Force Base, Fiscal Year 2003

Category	Amount
PAYROLL	
Military payroll	$218,394,648
Civil Service and Non-Appropriated Fund Civilian payroll	$297,856,499
Other Civilian/contractor payroll	$869,610,865
TOTAL ANNUAL PAYROLL	**$1,385,862,012**
ANNUAL EXPENDITURES IN THE LOCAL COMMUNITY	
Construction projects	$36,205,163
Service contracts	$68,373,157
Local Purchases	$468,645,043
O&M Expenditures	$588,526,989
Education & Health	$8,682,256
Temporary Duty Bed Nights	$5,661,777
TOTAL NON-PAY	**$1,176,094,385**
TOTAL EXPENDITURES (ANNUAL PAYROLL + NON-PAY)	**$2,561,956,397**
TOTAL ESTIMATED ANNUAL DOLLAR VALUE OF JOBS CREATED	**$855,202,932**
TOTAL ANNUAL ECONOMIC IMPACT ESTIMATE (EXPENDITURES + ESTIMATED DOLLAR VALUE OF JOBS CREATED)	**$3,417,159,329**

Source: US Air Force 2004b.

3.10.3 Environmental Justice Considerations

According to the Federal Interagency Working Group on Environmental Justice, "adverse environmental impacts are defined as having a negative impact or effect on human health or the environment that is significant, unacceptable or above generally accepted norms. Adverse environmental effects may include ecological, cultural, human health, economic, or social impacts when interrelated to impacts on the natural or physical environment."

This section provides information on minority and low-income populations throughout the ROI. An environmental justice analysis would need to be conducted if there were an adverse environmental impact as a result of the Proposed Actions.

3.10.3.1 Minority Population

According to the 2000 census, virtually every tract within the Albuquerque metropolitan statistical area (MSA) had a population in which at least 25 percent of the population was minority or non-white. North and south of Albuquerque, along the Rio Grande River and east of the base, are a number of towns and villages, most with primarily Hispanic populations, including Los Ranchos (37 percent Hispanic); Tijeras Village (56 percent); Belen (69 percent); Bernalillo (75 percent); Bosque Farms (30 percent); Corrales (26 percent); Los Chaves (54 percent); Los Lunas (59 percent); Tome-Adelino (63 percent); and Valencia (50 percent) (US Census Bureau 2004b).

There are also nine primarily American Indian communities within the Albuquerque MSA. Most portions of the northern boundary of the Isleta Indian Reservation coincide with the southern boundary of Kirtland AFB, but the Isleta people primarily live near the Rio Grande, several miles from the boundary between the reservation and the base.

Seven additional Indian reservations, with persons residing in dense settlements known as pueblos, are located in the Sandoval County portion of the Albuquerque MSA. In 2000, these reservations included Sandia Pueblo (4,414 residents); Santa Ana Pueblo (487); San Felipe Pueblo (3,185); Santo Domingo Pueblo (3,166); Cochiti Pueblo (1,502); Zia Pueblo (646); and Jemez Pueblo (1,958) (University of New Mexico 2003).

3.10.3.2 Low-Income Population

In 2000, persons with low incomes were not nearly as prevalent throughout the ROI as were minority persons. Poverty levels for the ROI in 2000 were at 10.2 percent for families and 13.7 percent for individuals. The most notable socioeconomic characteristic of the Indian communities is the large number of low-income persons. For comparison, the Isleta Pueblo within the ROI had 36.2 percent of its family population at poverty level and 38.5 percent of individuals at or below poverty level.

3.11 HAZARDOUS MATERIALS AND WASTE MANAGEMENT

3.11.1 Definition of Activity

Hazardous materials are defined as substances with strong physical properties of ignitability, corrosivity, reactivity, or toxicity which may cause an increase in mortality, a

serious irreversible illness, or incapacitating reversible illness, or pose a substantial threat to human health or the environment. Hazardous wastes are defined as any solid, liquid, contained gaseous, or semisolid waste, or any combination of wastes that pose a substantial present or potential hazard to human health or the environment.

Environmental management activities at Kirtland AFB are conducted in accordance with the Kirtland AFB Hazardous Waste Management Plan and consist of the treatment and/or disposal of sanitary sewage, municipal solid waste, and industrial waste, including hazardous waste. In addition to the activities related to currently generated waste, the Installation Restoration Program is intended to identify, confirm, quantify, and remediate problems caused by past management of hazardous wastes at USAF facilities.

3.11.2 Existing Conditions

The following sections describe solid waste and hazardous waste management at Kirtland AFB.

3.11.2.1 Solid Waste

Solid municipal waste generated by commercial activities and housing on base is sent to Waste Management of New Mexico sites off base. These sites include Rio Rancho and Torrance County facilities. Waste generated by construction and demolition activities is taken to the Kirtland AFB Landfill. The estimated amount of landfill waste generated on Kirtland AFB per year is shown in Table 3-9. All solid wastes are disposed of in accordance with USAF, Kirtland AFB, and applicable federal, state, and local regulations.

Table 3-9. Estimates of Solid Waste Generated by Kirtland Air Force Base (in tons)

Year	Waste Generated by Commercial Activities[a]	Waste Generated by Housing on base[b]	Waste Generated by Construction and Demolition[c]
1996	3,583	1,677	90,729
1997	4,362	2,318	40,848
1998	4,213	2,180	43,650
1999	3,783	1,863	36,699
2000	4,087	1,644	46,298
2001	3,766	1,403	53,075
2002	3,638	1,177	3,190

Source: Kitt 2003.
Notes: [a] Sent to Waste Management facilities at Rio Rancho and Torrance County.
[b] Sent to Rio Rancho Waste Management facility.
[c] Sent to Kirtland AFB landfill.

3.11.2.2 Hazardous Wastes

Kirtland AFB operates as a large-quantity generator of hazardous waste and as a treatment, storage, and disposal facility. A Resource Conservation and Recovery Act Part B Permit issued by the State of New Mexico to Kirtland AFB regulates the collection and storage of hazardous waste. Hazardous waste collection and storage sites are operated by the Defense Reutilization and Marketing Office which arranges off-site

disposal of the waste. Some wastes are collected by outside contractors at designated collection points. Photographic laboratory wastes are discharged to sanitary sewers following silver recovery and neutralization. Asbestos and asbestos-containing materials found in numerous buildings at the base are handled in accordance with the Kirtland AFB Asbestos Management Plan (USAF undated).

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CHAPTER 4
ENVIRONMENTAL CONSEQUENCES

4.1 HEALTH AND SAFETY

4.1.1 Methodology

An impact to safety would be considered significant if implementation of the proposed action would substantially increase risks associated with mishap potential or safety relevant to the public or the environment. For example, if implementation of a proposed action would render existing base facilities incompatible with safety criteria (e.g., runway protection zones [RPZs] or explosive safety zones), safety impacts would be considered significant.

An impact to children from environmental health risks or safety risks would be considered significant if a proposed action would result in a disproportionate adverse impact to the health or safety of children.

4.1.2 Impacts

Potential impacts to human health and safety were determined by comparing present conditions with conditions that would occur during construction and operation of the new facilities. Changes in safety resulting from these Proposed Actions were determined by examining the project sites in relation to the RPZs and explosive safety zones present on the base. Encroachment on these zones was assessed compared with the risk of the actions involved.

Analysis of potential impacts to children includes: 1) identifying and describing hazards that could potentially affect children; 2) examining the potential effect the proposed action may have on children; and 3) assessing the significance of potential impacts.

4.1.2.1 Proposed Actions

The proposed facilities do not encroach upon RPZs or any explosive safety zones, so these areas would not be affected by or affect the Proposed Actions.

There would be no disproportionate increase in environmental health and safety risks to children from the Proposed Actions. Children would not be present in the construction area. Although some children would likely accompany adults to the Automatic Car Wash and Drive-Thru Coffee Kiosk, risks would be negligible. Therefore, possible disproportionate negative impacts to children identified in Executive Order (EO) 13045, *Protection of Children from Environmental Health Risks and Safety Risks,* would not occur.

4.1.2.2 Alternative 1

Implementation of Alternative 1 would have the same impact to health and safety as the Proposed Actions.

4.1.2.3 No-Action Alternative

Selection of the No-Action Alternative would result in continued use of the existing car wash on base and other car washes off base. Also, coffee would continue to be purchased in local coffee shops or other locations presently offering this service. Under this alternative, no automatic car washes or drive-thru coffee kiosks would be available at Kirtland Air Force Base (AFB). Implementation of the No-Action Alternative would not change current conditions of safety or risks to children on base.

4.2 AIR QUALITY

4.2.1 Methodology

The 1990 amendments to the Clean Air Act (CAA) require federal agencies to conform to the affected State Implementation Plan (SIP) with respect to achieving and maintaining attainment of National Ambient Air Quality Standards (NAAQS) and addressing air quality impacts. An air quality impact resulting from a proposed action would be significant if it would: (1) increase concentrations of ambient criteria pollutants or ozone precursors to levels exceeding NAAQS, (2) increase concentrations of pollutants already at nonattainment levels, (3) lead to establishment of a new nonattainment area by the governor of the state or the Environmental Protection Agency, or (4) delay achievement of attainment in accordance with the SIP.

The CAA General Conformity Rule states that nonattainment and maintenance areas must conform to the applicable SIP. Kirtland AFB is covered by a carbon monoxide (CO) maintenance plan, and the applicable de minimis level for CO is 100 tons per year. Furthermore, total CO pollutant emissions in the Albuquerque-Bernalillo County air basin are estimated to be 190,540 tons per year in 1999. Therefore, CO emissions from mobile, area, and stationary, as well as construction phase emissions associated with a project at Kirtland AFB would not be considered regionally significant unless they were in excess of 19,054 tons per year (10 percent of 190,540). The CAA conformity rule states that only net emissions must be considered.

4.2.2 Impacts

4.2.2.1 Proposed Actions

Construction emissions from vehicles and equipment would be temporary. Estimated CO emissions from construction vehicles and equipment are outlined in Table 4-1. Emissions from operation of the Automatic Car Wash and Drive-Thru Coffee Kiosk would be minimal.

4.2.2.2 Alternative 1

Alternative 1 would have the same impact to air quality as the Proposed Actions.

Table 4-1. Carbon Monoxide Emissions from Non-road Mobile Sources Generated by the Proposed Actions during Construction Phase

Categories	CO Emission Factors lb/hr	Total CO Emissions lb/yr	Total CO Emissions[a] tons/yr
Contractor-Owned Vehicles[b]	23.42	11,240	5.62
Pavers	4.58	2,200	1.10
Cement and Mortar Mixers	0.33	160	0.08
Off-Highway Tractors	7.08	3,400	1.70
Dumpers/Tenders	0.17	80	0.04
Off-Highway Truck	35.25	16,920	8.46
Grader	8.00	3,840	1.92
Scraper	13.00	6,240	3.12
Roller	13.92	6,680	3.34
Total	**105.75**	**50,760**	**25.38**
Albuquerque/Bernalillo County Standard[c]		**200,000**	**100**
Environmental Protection Agency Standard[d]		**200,000**	**100**

Notes:
[a] Emission Factors for heavy-duty, diesel-powered construction equipment were obtained from the Environmental Protection Agency Non-road Emissions Draft Model, Office of Air And Radiation, US Environmental Protection Agency, December 2002 (Environmental Protection Agency 2002b).
[b] Calculation of the Contractor Owned Vehicles Category was calculated using the US Air Force Air Conformity Applicability Model for 5 contractor-owned vehicles commuting to the base using a 30-mile round trip.
[c] Standard obtained from Ambient Air Quality, New Mexico Environment Department, Air Quality Bureau, October 2002.
[d] 40 Code of Federal Regulations 93.153(B)(1) - Carbon Monoxide Standard for Non-Attainment Areas.
Assumptions:
The work period for each of the categories of equipment was calculated for two pieces of equipment running 8 hours per day for 5 days per week for 12 weeks. Each project would generate specific amounts of CO, based on the duration of the project. The amount of CO emitted is tabulated both individually by project, and combined as if all construction project activities occurred concurrently.
CO=carbon monoxide lb/hr=pounds per hour tons/yr=tons per year

4.2.2.3 No-Action Alternative

No changes to air quality would result from selection of the No-Action Alternative because no construction activities would occur.

4.3 NOISE

4.3.1 Methodology

Noise impact analyses typically evaluate potential changes to existing noise environments that would result from implementation of a proposed action. Potential changes in the noise environment can be beneficial (i.e., if they reduce the number of sensitive receptors exposed to unacceptable noise levels), negligible (i.e., if the number of sensitive receptors exposed to unacceptable noise levels is essentially unchanged), or adverse (i.e., if they result in increased exposure of sensitive receptors to unacceptable noise levels). Noise impacts would be considered significant if health and safety

standards were violated, if sensitive receptors were disproportionately affected, or if damage resulted to personal property.

4.3.2 Impacts

Land use guidelines established by the US Department of Housing and Urban Development and based on findings of the Federal Interagency Committee on Noise recommend acceptable levels of noise exposure for various types of land uses (Appendix C). Projected noise impacts from the Proposed Actions and alternatives were evaluated quantitatively against these acceptable noise levels.

4.3.2.1 Proposed Actions

Construction equipment would cause a minor, temporary increase in noise near the project sites, but no sensitive receptors would be impacted. There would be no adverse impact to any sensitive receptors from operation of the Automatic Car Wash or Drive-Thru Coffee Kiosk.

4.3.2.2 Alternative 1

Impacts to noise under Alternative 1 would be the same as those for the Proposed Actions.

4.3.2.3 No-Action Alternative

No changes to the noise environment would result from selection of the No-Action Alternative because no change in the noise environment would occur.

4.4 LAND USE AND VISUAL RESOURCES

4.4.1 Methodology

Potential impacts to land use are evaluated by determining if an action is compatible with existing land use and in compliance with adopted land use plans and policies. In general, land use impacts would be considered significant if they would: (1) be inconsistent or noncompliant with applicable land use plans and policies, (2) prevent continued use or occupation of an area, or (3) be incompatible with adjacent or nearby land use to the extent that public health or safety is threatened.

Criteria for determining the significance of impacts to visual resources are based on the level of visual sensitivity in an area. Visual sensitivity is defined as the degree of public interest in a visual resource and concern over adverse changes in the quality of that resource. In general, an impact on a visual resource would be considered significant if implementation of an action would substantially alter a sensitive visual setting.

4.4.2 Impacts

4.4.2.1 Proposed Actions

Construction of the new facilities would disturb less than one acre of land and would not result in any change in land use. The new facilities would be similar/compatible to

other buildings in the surrounding area, and would comply with existing and projected land use and land use policies and plans.

After assessing the visual character and relative sensitivity of the affected setting, changes to the landscape associated with the Proposed Actions and alternatives were examined in terms of their potential to noticeably alter existing viewsheds. The new Automatic Car Wash would be designed to be consistent with existing buildings.

New construction and emplacement of a prefabricated building for the Drive-Thru Coffee Kiosk would occur with implementation of the Proposed Actions. Since the action would not degrade the current visual conditions present at the project location, no adverse impacts to visual resources would occur.

4.4.2.2 Alternative 1

Under Alternative 1, impacts to land use and visual resources would be the same as those for the Proposed Actions.

4.4.2.3 No-Action Alternative

The No-Action Alternative would result in no change to land use or visual resources at Kirtland AFB.

4.5 TRANSPORTATION AND UTILITIES

4.5.1 Methodology

Impacts to transportation and circulation are assessed by determining an action's potential to change current transportation patterns, systems, service, and safety. Impacts may arise from physical changes to circulation (e.g. closing, rerouting, or creating roads), construction activity temporarily disrupting existing local-area traffic patterns, or changes in daily or peak-hour traffic volumes created by workforce and population changes related to installation activities. An impact on roadway capacities would be considered significant if a road with no history of over-capacity traffic volumes were forced to operate at or beyond its design capability. An impact may also be considered significant if an action would increase traffic on roads already experiencing traffic problems.

Impacts to utility services are assessed by determining if an action would result in a change in utility services including water, electricity, natural gas, sewer, telephone, solid waste disposal services, or wastewater. An impact to utilities would be significant if an action would require construction to expand utility lines or add additional utility services to support utility needs.

4.5.2 Impacts

Potential impacts to transportation and circulation from the Proposed Actions and alternatives were analyzed by: (1) identifying and describing transportation and circulation that could affect or be affected by the projects; (2) examining the effects the actions may have on the resource; (3) assessing the significance of potential impacts; and (4) providing measures to mitigate potentially significant impacts.

Potential impacts to utilities from the Proposed Actions were analyzed by comparing utility service needs to current needs.

4.5.2.1 Proposed Actions

Construction would result in increased construction worker and material-hauling vehicle trips to and from the project sites. Some supply deliveries also would occur at the construction sites and could result in up to two round trips per day. This would result in a total of no more than 12 large vehicle trips on Kirtland AFB roads each day from construction activities. There would also be a slight increase in construction worker trips on the base during the year of activity.

Operation of the new Automatic Car Wash would not affect transportation at the proposed location because it would provide an additional service to other similar services that already exist on the site. The Drive-Thru Coffee Kiosk may result in a minor increase in traffic in the area as personnel get coffee on their way to work. No significant changes in personnel numbers are anticipated as a result of the Proposed Actions and no increase in traffic would occur from that source.

The location of the Proposed Actions is an area of the base that is occupied by many community services and adequate utilities already exist in the area. Bioenvironmental Engineering Flight would be notified of any water line disturbances including new connections. All standard operating procedures for the disinfection of mains, tanks, and wells would be followed for any water supply systems that may become contaminated during construction activities.

With a reclaim system, the Automatic Car Wash would use between 6 and 12 gallons of fresh water during the rinse cycle. The wash cycle would only use reclaimed water. Use of water for the Drive-Thru Coffee Kiosk would not be significant. Electrical and natural gas consumption for both the Automatic Car Wash and the Drive-Thru Coffee Kiosk would not negatively impact existing consumption or overload systems. Wastewater from both facilities would go into the sanitary sewer system. Typical waste loads from the type of Automatic Car Wash being installed are 158 milligrams per liter (mgl) for Chemical Oxygen Demand and 6 mgl for Total Suspended Solids (International Car Wash Association 2002). The Proposed Actions would not create a need for an expansion of current utility services, and therefore, no significant impacts would result.

4.5.2.2 Alternative 1

Impacts under Alternative 1 would be the same as those for the Proposed Actions.

4.5.2.3 No-Action Alternative

The No-Action Alternative would result in no change to current conditions of transportation or utilities at Kirtland AFB because construction of the Army & Air Force Exchange Service (AAFES) Automatic Car Wash and Drive-Thru Coffee Kiosk would not occur.

4.6 GEOLOGICAL RESOURCES

4.6.1 Methodology

An impact to geological resources would be considered significant if implementation of a proposed action would violate a federal, state, or local law or regulation protecting geological resources (e.g., impacted unique landforms or rock formations), or result in uncontrolled erosion over a larger area than that allowed by regulations protecting soil resources.

4.6.2 Impacts

Protection of unique geological features and minimization of soil erosion are considered when evaluating impacts of a proposed action on geological resources. Generally, such impacts are not considered significant if proper construction techniques and erosion control measures can be implemented to minimize short- and long-term disturbance to soils and overcome limitations imposed by geological resources.

4.6.2.1 Proposed Actions

Implementation of the Proposed Actions would result in no significant impacts to regional geological resources. The site of the Proposed Actions is on existing pavement and a vacant field. Pavement would be removed for construction of the Automatic Car Wash. The Drive-Thru Coffee Kiosk would be constructed on existing pavement. These soils have been disturbed during the construction of previous facilities, therefore, construction of the Proposed Actions would have little impact on existing soils. Some wind erosion may occur during construction of the Proposed Actions, but this would be short-term and insignificant. The region's infrequent seismic activity would create no significant threat to construction workers given the use of standard construction procedures for facilities of this size and type.

4.6.2.2 Alternative 1

Implementation of Alternative 1 would result in the same impacts to geological resources as those for the Proposed Actions.

4.6.2.3 No-Action Alternative

Selection of the No-Action Alternative would result in no change to current geological resources at Kirtland AFB. Some minor wind erosion would continue on exposed soils.

4.7 WATER RESOURCES

4.7.1 Methodology

Criteria for determining the significance of impacts to water resources are based on water availability, quality, and use; existence of floodplains and wetlands; and applicable regulations. An impact to water resources would be considered significant if it would: (1) reduce or interfere with water availability to existing users, (2) create or contribute to

overdraft of groundwater basins, (3) exceed safe annual yield of water supply sources, (4) adversely affect water quality or otherwise endanger public health, (5) threaten or damage unique hydrologic characteristics, or (6) violate established laws or regulations that have been adopted to protect or manage water resources. Impacts to floodplains would be considered significant if a proposed action would negatively alter flow within a floodplain.

Determination of the significance of wetland impacts is based on: (1) the function and value of the wetland, (2) the proportion of the wetland that would be affected relative to the occurrence of similar wetlands in the region, (3) the sensitivity of the wetland to proposed activities, and (4) the duration of ecological ramifications. Impacts to wetland resources are considered significant if high value wetlands would be adversely affected.

4.7.2 Impacts

Potential impacts to water resources resulting from the Proposed Actions and alternatives were analyzed by: (1) identifying and describing the effects the actions may have on the resource, and (2) assessing the significance of potential impacts.

4.7.2.1 Proposed Actions

Water quality would not be affected as construction activities would be shallow and not approach the groundwater table. As the Proposed Actions are not located near a floodplain, this resource would not be impacted. Water consumption would increase with the operation of the Automatic Car Wash. Water use would increase slightly with the operation of the Drive-Thru Coffee Kiosk.

The Automatic Car Wash would have a reclaim system. Each rinse cycle would use approximately 6-12 gallons of fresh water per wash (the rinse cycle is approximately 1 minute). The Water Management Policy and Action Plan for Kirtland AFB expired in December 2004. Kirtland AFB has not discussed any new water conservation goals with the City of Albuquerque. A water meter would be installed at the car wash site to charge for water use in keeping with past and future conservation goals. The meter would also serve in monitoring water use at the car wash and potential use would be included in future water management and conservation plans/goals for Kirtland AFB. As part of Kirtland AFB's current Water Management Plan, the new Automatic Car Wash would conform to the policy of closing during an extreme drought. There would be no significant water use for the planned landscape at the car wash site, since a small portion of the Automatic Car Wash would be xeriscaped next to the existing grass area.

No impacts to wetlands would occur since none exist in the immediate area of the proposed projects (i.e. within 1 mile).

4.7.2.2 Alternative 1

Implementation of Alternative 1 would have the same or similar impacts to water resources as those for the Proposed Actions.

4.7.2.3 No-Action Alternative

Under the No-Action Alternative, there would be no changes to current water resources at Kirtland AFB.

4.8 BIOLOGICAL RESOURCES

4.8.1 Methodology

Determination of the significance of impacts to biological resources is based on: (1) the importance (legal, commercial, recreational, ecological, or scientific) of the resource; (2) the proportion of the resource that would be affected relative to its occurrence in the region; (3) the sensitivity of the resource to proposed activities; and (4) the duration of ecological ramifications. Impacts to biological resources are considered significant if species or habitats of high concern are adversely affected over relatively large areas, or disturbances cause reductions in population size or distribution of a species of special concern.

4.8.2 Impacts

Sensitive species or habitats in the vicinity of the project sites were identified and potential impacts to biological resources, such as habitat loss and noise resulting from implementation of the Proposed Actions, were evaluated.

4.8.2.1 Proposed Actions

No significant impacts would occur to biological resources from the construction and operation of the Proposed Actions. Some vegetation would be removed, but this consists mainly of weedy species that have little wildlife value. Wildlife that use burrows such as rabbits, mice, and prairie dogs may inadvertently be destroyed during construction as burrows occurring on the site would be excavated or crushed. These species are common throughout the base, so the loss of these few individuals would have little impact on wildlife in the area. Burrowing owls are the only sensitive species potentially affected by the Proposed Actions. Currently, no burrowing owls are located at the proposed sites and the sites would be surveyed prior to construction. Any burrowing owls found would be relocated.

4.8.2.2 Alternative 1

Under Alternative 1, impacts to biological resources would be the same as those for the Proposed Actions.

4.8.2.3 No-Action Alternative

Under the No-Action Alternative, there would be no changes to biological resources.

4.9 CULTURAL RESOURCES

4.9.1 Methodology

The National Historic Preservation Act of 1966, as amended, establishes the National Register of Historic Places and Title 36 Code of Federal Regulations Section 60.4, defines the criteria used to establish significance and eligibility to the National Register as follows:

"The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and,

a) That are associated with events that have made a significant contribution to the broad patterns of our history; or

b) That are associated with the lives of persons significant in our past; or

c) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

d) That have yielded, or may be likely to yield, information important in prehistory or history."

4.9.2 Impacts

Analysis of potential impacts to significant cultural resources considers both direct and indirect impacts. Impacts may occur by: 1) physically altering, damaging, or destroying all or part of a resource; 2) altering the characteristics of the surrounding environment that contribute to a resources significance; 3) introducing visual, audible, or atmospheric elements that are out of character with the property or alter its setting; or 4) neglecting the resource to the extent that it is deteriorating or destroyed. Impacts are assessed by identifying the types and locations of a proposed action and determining the exact locations of cultural resources that could be affected.

4.9.2.1 Proposed Actions

No significant cultural resources, historic or prehistoric, exist within the proposed project boundaries. As a result, no impacts are anticipated to occur to known cultural resources from implementation of the Proposed Actions.

4.9.2.2 Alternative 1

Alternative 1, if selected, would have the same impacts to cultural resources as the Proposed Actions.

4.9.2.3 No-Action Alternative

If the No-Action Alternative were to be selected, cultural resources would be unaffected.

4.10 SOCIOECONOMICS

4.10.1 Methodology

Impacts of population and expenditure are assessed by determining an action's direct effect on the local economy and related effects on other socioeconomic resources (e.g., housing). The magnitude of potential impacts can vary greatly depending on the location of a proposed action; for example, the termination of an operation that employs 25 people in a major metropolitan area may be virtually unnoticed while the same action would have significant adverse impacts in a small community. A socioeconomic impact would be considered significant if implementation of an action would substantially shift population trends, or adversely affect regional spending patterns.

An impact to environmental justice would be considered significant if an action would result in a disproportionate adverse impact to minority or low-income populations in the project vicinity.

4.10.2 Impacts

Potential impacts to socioeconomic resources were analyzed by: (1) identifying and describing socioeconomic resources that could affect or be affected by a project, (2) examining the effects this action may have on socioeconomic resources, (3) assessing the significance of potential impacts, and (4) providing measures to mitigate potentially significant impacts.

4.10.2.1 Proposed Actions

Socioeconomic impacts from implementation of the Proposed Actions would be beneficial, but minor. Purchase of construction materials and salaries paid to construction workers would constitute a minor, temporary, beneficial impact on the local economy. Contracts for construction equipment would also have a minor temporary, beneficial impact. Beneficial impacts from creation of a few new jobs at the facilities would result in very minor long-term beneficial impacts to socioeconomics from operation of the proposed facilities. In a metropolitan area the size of Albuquerque, these impacts would be negligible.

Customers in need of a car wash or coffee may choose the proposed on-base facilities rather than existing off-base locations. Therefore, minor negative economic impacts may occur at off-base car washes and coffee kiosks. Although the Albuquerque area has relatively high percentages of minority and low-income populations, these communities would not be disproportionately affected. Therefore, possible impacts to populations identified in EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* would be negligible.

4.10.2.2 Alternative 1

Selection of Alternative 1 would result in the same impacts to socioeconomics as for the Proposed Actions.

4.10.2.3 No-Action Alternative

Selection of the No-Action Alternative would not result in any changes to socioeconomics or to the minority or low-income populations in the Albuquerque area.

4.11 HAZARDOUS MATERIALS AND SOLID WASTE MANAGEMENT

4.11.1 Methodology

Numerous local, state, and federal laws regulate the storage, handling, disposal, and transportation of hazardous materials and wastes; the primary purpose of these laws is to protect public health and the environment. The significance of potential impacts associated with hazardous substances is based on ignitability, corrosivity, reactivity, and toxicity. Generally, impacts associated with hazardous materials and wastes would be considered significant if implementation of a proposed action would involve the storage, use, transportation, or disposal of hazardous substances that would substantially increase human health risks or environmental exposure. For example, if implementation of a proposed action would exacerbate conditions at an existing area of contamination associated with the Installation Restoration Program, impacts would be considered significant.

A reduction in the quantity of hazardous substances used and/or generated would be a beneficial impact; a substantial increase in the quantity and/or toxicity of hazardous substances used or generated could be potentially significant. Significant impacts would result if a substantial increase in human health risks and/or environmental exposure were generated and such impacts could not be mitigated to acceptable local, state, and federal levels.

4.11.2 Impacts

Analysis of potential impacts to hazardous materials and wastes typically includes: (1) a comparative analysis of existing and proposed hazardous materials and waste management practices to evaluate potential changes resulting from implementation of a proposed action or alternative, (2) assessment of the significance of potential impacts, and (3) provision of mitigation measures if potentially significant impacts are identified.

4.11.2.1 Proposed Actions

Construction of the new facilities would result in a short-term increase in the generation of nonhazardous and hazardous waste. Nonhazardous construction wastes (e.g., concrete and lumber) and nonhazardous waste generated by increased worker activity (e.g., plastics, paper, food waste) would be collected in on-site dumpsters and transported to a permitted Subtitle D landfill. Recyclable wastes would be separated for pickup in accordance with the Kirtland AFB Qualified Recycling Program. With the

exception of fuel, oils, and lubricants used by construction equipment, no additional hazardous wastes would be generated by construction of the new facilities.

Operation of the Automatic Car Wash would generate minimal amounts of hazardous wastes and no hazardous wastes would be generated by operation of the Drive-Thru Coffee Kiosk.

Hazardous waste from operation of the Automatic Car Wash would include: detergents, oil and grease, phosphorus, nitrogen as ammonia, nitrate plus nitrite, priority metals (antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, zing), total suspended solids, and settleable solids.

A Highland Oil/Water Separator would be used for the containment of oils, grease and settleable solids including metals. The oil/water separator would be cleaned regularly and all hazardous wastes would be properly disposed of in accordance with all applicable federal, state, and local regulations.

4.11.2.2 Alternative 1

Selection of Alternative 1 would result in the same impacts to hazardous materials and solid waste management as those for the Proposed Actions.

4.11.2.2 No-Action Alternative

Selection of the No-Action Alternative would result in no change to current conditions of environmental management at Kirtland AFB.

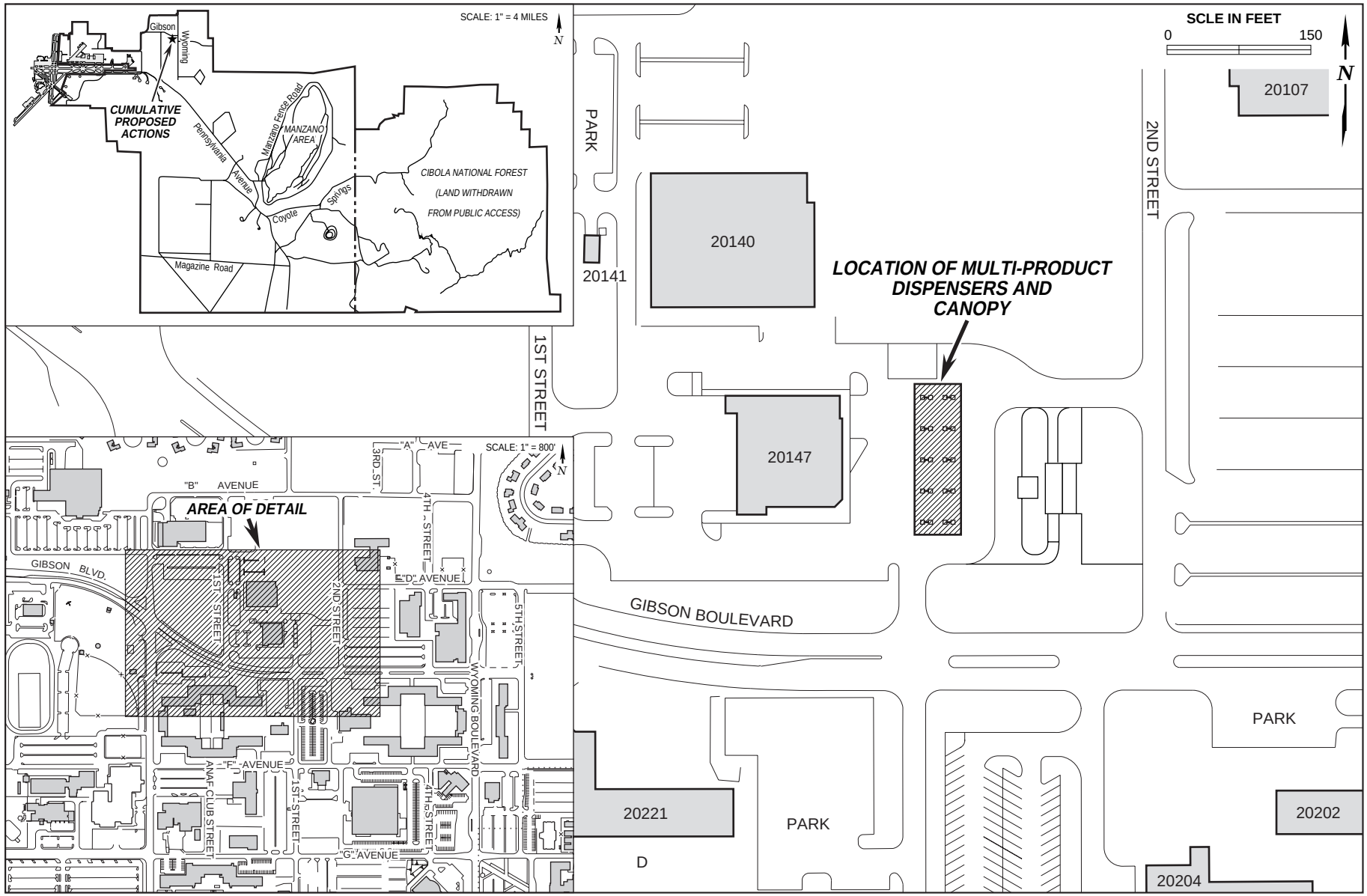
4.12 CUMULATIVE EFFECTS

Under Council on Environmental Quality 1508.7, cumulative impacts represent an "incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions…"

The AAFES Shoppette/gas station on Kirtland AFB is in need of additional fueling capabilities to better serve the retired and active military and civilian population on Kirtland AFB. This action would require the installation of ten new multi-product fuel dispensers and canopy (Figure 4-1). This Shoppette/gas station has the largest volume pumped for any gas station in the Albuquerque area where the City.

As a result of the increase of fuel dispensers to this facility, an application for Air Quality Permit #806-M1 (to include the additional pumps and an increase to the annual throughput of gallons of gasoline) was submitted to the City of Albuquerque in December.

The proposed installation of ten new multi-product fuel dispensers at the AAFES shoppette/gas station would create a potential cumulative impact on air quality at Kirtland AFB.



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Proposed Location of Multi-Product Dispensers and Canopy at Kirtland Air Force Base

FIGURE

4-1

There are seven other actions proposed on the base that were considered in assessing the potential cumulative impacts in the analysis of these Proposed Actions:

- the ongoing demolition of aging military family housing (discussed above);
- the ongoing relocation of Truman Gate;
- the proposed construction of a campus for pararescue/parajumper training by the 58th Special Operations Wing of Air Education and Training Command. Construction is proposed in an area currently occupied by aging military housing which would be demolished to make room for the campus;
- the proposed construction and operation of an HC-130P Flight Simulator Facility and a Corrosion Control Facility by the 58th Special Operations Wing;
- the proposed beddown of a training wing of CV-22 Osprey tilt-rotor aircraft at Kirtland AFB;
- the construction and operation of Phase I of the Air Force Research Laboratory Kirtland Technology Park; and
- the proposed construction of a bulk fuel storage and offloading facility.

Resources that were assessed for cumulative impacts resulting from these current and future actions on base include:

Health and Safety - No cumulative effects are expected to occur except for beneficial impacts from new tanks and safety measures for the Bulk Fuel Facility.

Air Quality - Cumulative effects to air quality would include minor, temporary and short-term impacts from construction and demolition activities resulting in fugitive dust and emissions from heavy-duty construction equipment. There would also be minor impacts from emissions from increased transportation and operation of the new facilities.

Noise - Minor, temporary short-term impacts would occur during construction and demolition activities. Potential minor impacts could occur from increases in noise resulting from additional vehicle traffic.

Land Use and Visual Resources - Minor, temporary short-term cumulative impacts to land use and visual resources could occur during construction activities. Long-term land use changes in the developed area could occur if the Zia housing area became a training area.

Transportation and Utilities - Minor, short-term and temporary impacts from construction vehicles could occur to base roadways. Operation of new facilities would create a minor increase in traffic.

Water Resources - Minor increases in water usage could occur from operation of new facilities. Because best management practices are being implemented, no significant impacts or contamination to surface water, or groundwater is expected from cumulative impacts from current and future projects.

Hazardous Materials and Solid Waste – Minor increases in hazardous waste would occur from construction and operation of the proposed facilities. Solid waste from construction as well as operation of new facilities would also increase slightly.

No past, present or reasonably foreseeable future projects have been identified on base which, when added to the effects of the Proposed Actions, would result in a significant impact to environmental resources.

4.13 COMPARISON MATRIX OF EFFECTS OF ALL ALTERNATIVES

Table 4-2. Comparison Matrix of Effects of All Alternatives

Resource	Proposed Action	Alternative 1	No-Action Alternative	Comments
Health and Safety	No impact.	No impact.	No impact.	NA
Air Quality	Minor, temporary impact from construction.	Minor, temporary impact from construction.	No impact.	Emissions from construction equipment would have a temporary impact on air quality during the construction phase. This would not represent a significant impact on air quality.
Noise	Minor, temporary increase on noise environment during construction.	Minor, temporary increase on noise environment during construction.	No impact.	Noise would increase during construction activities from construction equipment but would be limited to daytime hours.
Land Use	No impact.	No impact.	No impact.	NA
Visual Resources	No impact.	No impact.	No impact.	NA
Transportation and Utilities	Minor, temporary impact on transportation during construction.	Minor, temporary impact on transportation during construction.	No impact.	Transportation would be impacted on a temporary basis while construction activities are occurring and construction vehicles and equipment go to and from the project site. However, this would not represent a significant impact on transportation
Geological Resources	No impact.	No impact.	No impact.	NA
Water Resources	No impact.	No impact.	No impact.	NA
Biological Resources	No impact.	No impact.	No impact.	NA
Cultural Resources	No impact.	No impact.	No impact.	NA
Socioeconomics	Minor, temporary beneficial impact during construction. May have a minor negative economic impact to off base car wash facilities nearby.	Minor, temporary beneficial impact during construction. May have a minor negative economic impact to off base car wash facilities nearby.	No impact.	Beneficial impacts would result from hiring of a construction company and the purchase of construction materials. Negative economic impacts may result during operations if customers are taken away from nearby car washes or coffee facilities off base.

Table 4-2. Comparison Matrix of Effects of All Alternatives (continued)

Resource	Proposed Action	Alternative 1	No-Action Alternative	Comments
Hazardous Materials and Waste Management	Minor impacts from construction and operation of Automatic Car Wash.	Minor impacts from construction and operation of Automatic Car Wash.	No impact.	Oil/water separator would contain most of the hazardous materials and waste. Sludge would re removed regularly and disposed of as a hazardous waste in accordance with all applicable laws and regulations. There would be an increase of effluent wastewater into the sanitary sewer system on base from operation of the Automatic Car Wash.

4.14 MITIGATIONS MATRIX

Table 4-3. Mitigations Matrix

Resource	Mitigations			
	Proposed Action	Alternative 1	No-Action Alternative	Comments
Health and Safety	No mitigation actions required.	No mitigation actions required.	No mitigation actions required.	None
Air Quality	No mitigation actions required.	No mitigation actions required.	No mitigation actions required.	None
Noise	No mitigation actions required.	No mitigation actions required.	No mitigation actions required.	None
Land Use	No mitigation actions required.	No mitigation actions required.	No mitigation actions required.	None
Visual Resources	No mitigation actions required.	No mitigation actions required.	No mitigation actions required.	None
Transportation/Utilities	No mitigation actions required.	No mitigation actions required.	No mitigation actions required.	None
Geological Resources	No mitigation actions required. BMPs.	No mitigation actions required. BMPs..	No mitigation actions required.	None
Water Resources	No mitigation actions required. BMPs.	No mitigation actions required. BMPs.	No mitigation actions required.	None
Biological Resources	No mitigation actions required. BMPs.	No mitigation actions required. BMPs.	No mitigation actions required.	None
Cultural Resources	No mitigation actions required.	No mitigation actions required.	No mitigation actions required.	None
Socioeconomics	No mitigation actions required.	No mitigation actions required.	No mitigation actions required.	None
Hazardous Materials and Solid Waste Management	No mitigation actions required.	No mitigation actions required.	No mitigation actions required.	None

Note: BMPs=Best Management Practices**.**

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CHAPTER 5
ENVIRONMENTAL PERMITS REQUIRED FOR THE PROPOSED ACTIONS OR ALTERNATIVES

The Proposed Actions would require the following environmental permits or regulatory actions:

- An National Pollutant Discharge Elimination System (NPDES) Storm Water Permit would be required if individual construction sites (or common sites of development) would result in disturbance of 1-5 acres of total land area. Disturbance of greater than 5 acres would require a permit under the NPDES General Permit for Storm Water Discharges from construction activities (Federal Register/Vol. 68, No. 126/Tues., July 1, 2003/Notices).
- A Fugitive Dust Control Permit and Fugitive Dust Control Plan would be required for any active operations that would disturb ¾ acre or more.

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CHAPTER 6
LIST OF PREPARERS

This report was prepared for and under the direction of the 377th Air Base Wing Command of Kirtland Air Force Base by the LOPEZGARCIA GROUP. The members of the professional staff of the LOPEZGARCIA GROUP who participated in the development and technical review of this document are listed below.

Preparers	Education	Environmental Experience
Walter L. Moore Manager Colorado/ New Mexico Operations	*B.S., Zoology*	25 years
Kristine J. Andrews Environmental Scientist/ Noise Analyst	*B.A., Geography/ Environmental Studies and Energy Science*	6 years
Robert D. Frei Environmental Scientist/ Biologist	*B.S., Biology*	6 years
Christie Riebe Senior Biologist	*B.S. Wildlife Ecology*	22 years
Hollis Lawrence Archeologist	*B.A. Anthropology*	10 years
Rebecca L. Klundt Document Editor and Preparer	Document Manager	18 years
Deirdre Stites Technical Illustrator	*A.S., Geology*	25 years

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SECTION 7
PERSONS AND AGENICES CONSULTED

Darrin Rogers
AAFES
Project Manager
Dallas, TX

Gregory Smith
AAFES
Environmental Engineer
Dallas, TX

Valerie Butler
377 MSG/CEVQ
Cultural Resources Management
Kirtland AFB

Jackie Carnes
Air Quality Program Manager
377 MSG/CEVC
Kirtland AFB

Ken Pyron
Morris and Associates, Inc.
Raleigh, NC

Mark Zapalac
Morris and Associates, Inc.

Trini Saucedo
AAFES
General Manager
Kirtland AFB Exchange

Crisente Armada
AAFES
Kirtland AFB Shoppette-Manager

Evelyn Watkins
NEPA Program Manager
377 MSG/CEVQ
Kirtland AFB

Carol Finley
e^2M
Natural Resources Manager
Kirtland AFB

Jim Moore
RYKO Manufacturing
National Account Manager

Michael Whittington
AAFES
Associate General Council
Environmental Law
Dallas, TX

Pat Mantaño
Water Quality Program Manager
377 MSG/CEVC

Cliff Richardson
Energy Engineer
377 MSG/CECE
Kirtland AFB

Stuart Reider
City of Albuquerque
Public Works Department
Wastewater Utilities Division
Southwide Water Reclamation Plant
Albuquerque, NM

William Sayner
377 MSG/CECE
Kirtland AFB, NM

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CHAPTER 8
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APPENDIX A
SAMPLE TABLE

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APPENDIX A
SAMPLE TABLE

The table below shows the results of wastewater quality testing at Phoenix car washes that can be comparable to water use and types of conditions found in Albuquerque, New Mexico.

Table A-1. Sample Table of Wastewater Quality from Operation of an In-Bay Automatic Car Wash Compared to a Self-Service Car Wash

Table 2.1 Phoenix Sites – Wastewater Quality[2]				
Parameter	**In-bay Automatic**		**Self-Service Results**	
	Number*	Mean	Number	Mean
Oil & Grease	1/3	8	3/3	30.9
Phosphorus	3/3	0.49	3/3	0.30
Chemical Oxygen Demand	3/3	158	3/3	423
Nitrogen as Ammonia	2/3	3.54	3/3	2.41
Nitrate plus Nitrite	1/3	0.2	3/3	PQL (0.1)**
Priority Metals				
Antimony	1/3	0.018	2/3	0.007
Arsenic	1/3	0.007	3/3	PQL (0.005)
Beryllium	3/3	PQL (0.002)	3/3	PQL (0.002)
Cadmium	1/3	0.005	1/3	0.006
Chromium	3/3	PQL (0.05)	2/3	0.006
Copper	2/3	0.119	3/3	0.095
Lead	2/3	0.016	3/3	0.016
Mercury	3/3	PQL (0.0005)	3/3	PQL (0.0005)
Nickel	3/3	PQL (0.02)	3/3	PQL (0.02)
Selenium	3/3	PQL (0.005)	3/3	PQL (0.005)
Silver	3/3	PQL (0.04)	1/3	0.07 (2)
Thallium	3/3	PQL (0.001)	3/3	PQL (0.001)
Zinc	3/3	0.31	3/3	0.36
Total Suspended	1/3	6	3/3	10
Settleable Solids	3/3	PQL (0.5)	3/3	PQL (0.5)

Notes: [2] Laboratory analysis for Phoenix area sites was performed by Black & Beatch, 2850 E. Camelback Road, Suite 200, Phoenix, AZ 85016.

* The Number column contains a fraction representing the total number of sites tested in the denominator, and the total number of sites that had values above the procedure quantification limit (PQL) in the numerator. The mean value is calculated using only the sites that were above the PQL.

**The PQL is the limit at which the testing procedure can detect a specific substance. Numbers in parentheses indicate the lowest measurable quantity.

All values in mg/l.

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APPENDIX B
SPECIAL STATUS SPECIES IN BERNALILLO COUNTY

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APPENDIX B
SPECIAL STATUS SPECIES IN BERNALILLO COUNTY

Common Name	Scientific Name	Status	Occurrence on Kirtland AFB	Occurrence Within Withdrawal Area	Habitat	Season	Behavior
FISH							
Rio Grande silvery minnow	*Hybognathus amarus*	FE, SE, PCH	No	No	AQ	AY	Breeds
REPTILES							
Texas horned lizard	*Phrynosoma cornutum*	FSC	Potential	Potential	G, PJ	AY	Breeds
BIRDS							
Neotrophic cormorant	*Phalacrocorax brasilianus*	ST	No	No	R, AQ	SP, SM	Breeds
Bald eagle	*Haliaeetus leucocephalus*	FT, ST	Potential	Potential	G, PJ, P	SP, F	Transient
Northern goshawk	*Accipiter gentilis*	FSC	No	Potential	PJ, P	SP, SM, F	Transient, breeds in summer
Common black-hawk	*Buteogallus anthracinus anthracinus*	ST	No	No	R	SM	Breeds
Ferruginous hawk	*Buteo regalis*	FSC	Potential	Potential	G, PJ, P		
Whooping crane	*Grus americana*	FE, SE	No	No	G, R, AQ	W	Transient
Burrowing owl	*Athene cunicularia hypugaea*	FSC	Yes	Yes	G, PJ	SP, SM, F	Transient, nest in summer
Mexican spotted owl	*Strix occidentalis lucida*	FT, CH	Potential	Potential	PJ, P	AY	Transient, breeds in summer
White-eared hummingbird	*Hylocharis leucotis borealis*	ST	No	Potential	P	SM	Transient
Southwestern willow flycatcher	*Empidonax traillii extimus*	FE, SE, CH	No	No	R	SP, SM, F	Breeds
Loggerhead shrike	*Lanius ludovicianus*	FSC	Yes	Yes	G, PJ, R	AY	Transient, nests in summer, winter resident
American peregrine falcon	*Falco peregrinus anatum*	ST	Potential	Potential	G, PJ, P	SP,SM, F	Transient
Bell's vireo	*Vireo bellii*	ST	No	No	R	SM	Breeds
Gray vireo	*Vireo vicinior*	ST	Yes	Yes	G, PJ	SP, SM	Transient, breeds in summer

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Common Name	Scientific Name	Status	Occurrence on Kirtland AFB	Occurrence Within Withdrawal Area	Habitat	Season	Behavior
BIRDS (continued)							
Baird's sparrow	*Ammodramus bairdii*	ST	Potential	No	G, PJ	F	Transient
MAMMALS							
Black-footed ferret	*Mustela nigripes*	FE	No	No	G	AY	Breeds
Spotted bat	*Euderma maculatum*	ST	No	Potential	R, PJ, P	SM	Transient
Western small-footed myotis bat	*Myotis ciliolabrum melanorhinus*	FSC	No	Potential	R	SM	Breeds
Long-legged myotis bat	*Myotis volans interior*	FSC	No	Potential	PJ, P	SM	Breeds
Arizona black-tailed prairie dog	*Cynomys ludoficianus arizonicus*	C	No	No	G, PJ		
New Mexican jumping mouse	*Zapus hudsonius luteus*	ST	Potential	No	R	AY	Breeds
PLANTS							
Great Plains ladies'-tresses orchid	*Spiranthes magnicamporum*	SE	No	Potential	R, PJ	AY	Grows
Santa Fe Milkvetch	*Astragalus feensis*	S	Yes	No	G	AY	Grows

2 **Sources**: New Mexico Department of Game & Fish 2004, New Mexico Natural Heritage Program 2003, US Fish & Wildlife Service
3 2004.
4 **Notes**:
5 FE = Federal Endangered ST = State Threatened G = Grassland AY = All Year S = State Sensitive
6 FT = Federal Threatened FSC = Federal Species of Concern PJ = piñon/Juniper SP = Spring
7 C = Federal Candidate PCH = Proposed Critical Habitat P = Ponderosa SM = Summer
8 SE = State Endangered CH = Critical Habitat R = Riparian F = Fall

APPENDIX C
LAND USE COMPATIBILITY GUIDELINES

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APPENDIX C
LAND USE COMPATIBILITY GUIDELINES

Table C-1 shows the Department of Defense and Federal Aviation Administration land-use compatibility guidelines for determining noise impacts in airport communities.

Table C-1. Land-Use Compatibility with Yearly Day-Night Average Sound Levels

Land Use	Yearly DNLs in Decibels					
	Below 65	65-70	70-75	75-80	80-85	Over 85
Residential						
Residential, other than mobile homes and transient lodgings	Y	N(1)	N	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
Public Use						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoria, and concert halls	Y	25	30	N	N	N
Government services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
Commercial Use						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail – building materials, hardware, and farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade – general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing, general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(7)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding	Y	Y(7)	Y(7)	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor sports arenas and spectator sports	Y	Y(5)	Y(5)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts, and camps	Y	Y	Y	N	N	N
Golf courses, riding stables, and water recreation	Y	Y	25	30	N	N

Numbers in parentheses refer to notes.

* The designations contained in this table do not constitute a federal determination that any use of land covered by the program is acceptable or unacceptable under federal, state, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. Federal Aviation Administration determinations under Part 150 are not intended to substitute federally determined land uses for those determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise-compatible land uses.

NOTES FOR TABLE

(1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor-to-indoor NLR of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide an NLR of 20 dB; thus the reduction requirements are often stated as 5, 10, or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year-round. However, the use of NLR criteria will not eliminate outdoor noise problems.

(2) Measures to achieve NLR 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.

(3) Measures to achieve NLR 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.

(4) Measures to achieve NLR 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.

(5) Land-use compatible provided special sound reinforcement systems are installed.

(6) Residential buildings require an NLR of 25

(7) Residential buildings require an NLR of 30.

(8) Residential buildings not permitted.

KEY TO TABLE AND NOTES

Y (YES) = Land Use and related structures compatible without restrictions

N (No) = Land Use and related structures are not compatible and should be prohibited

NLR = Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.

25, 30, or 35 = Land Use and related structures generally compatible; measures to achieve NLR of 25, 30, or 35 dB must be incorporated into design and construction of structures.

DNL = Day-Night Average Sound Level

dB = decibels